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The other Articles by Gentlemen particularly conversant in the respective Subjects they have undertaken to explain.

V O L. II.

L O N D O N :

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THE MODERN DICTIONARY OF ARTS AND SCIENCES.

*Those Articles which are marked thus * are totally omitted in every other Dictionary of Arts and Sciences.*

D.

D Æ M

D, The fourth letter of the alphabet, and the third consonant, answering to the Hebrew Daleth, and Greek Delta.

D as a numeral denotes 500, and with a dash over it thus \overline{D} 5000. Used as an abbreviation, D. stands for Doctor, as M. D. doctor of medicine; D. T. doctor of theology; D. D. implies doctor of divinity, or dono dedit; D. D. D. is used for dat, dicat, dedicat; and D. D. D. D. for dignum Deo donum dedit.

DABAS, woollen stuffs of the manufacture of Bas, in Languedoc.

DABUIS, a white cotton stuff made in the East-Indies.

DACE, a species of cyprinus, very common in our rivers: it is longer and more slender than the roach, and has ten rays in the fin besides the anus.

DACTYL, in ancient poetry, a metrical foot, consisting of one long and two short syllables.

The dactyl and spondee are the only feet or measures used in hexameter verses; the former being esteemed more sprightly, and the latter more solemn and grave.

DADUCHI, in antiquity, priests of the goddess Ceres, so called, because, at

V o l. II.

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the feasts of that goddess, they ran about the temple, carrying a lighted torch, which they delivered from hand to hand, till it had passed through them all. This they did in memory of Ceres's searching for her daughter Proserpine, by the light of a torch, which she kindled in Mount Ætna.

* DÆDALUS, in fabulous history, an Athenian artist, who invented several mechanical instruments, as the saw, &c. and even made walking statues. He threw his brother's son out of a window, and killed him, fearing he should excel him in his art, because he had invented the potter's wheel; upon which he fled into Crete, to king Minos, and took his son Icarus along with him. He there built the celebrated labyrinth, in which he and his son were shut up, for having served the queen Paciphae in her base amour: however, making wings for himself and Icarus, they flew away; but the youth not observing his directions, fell into the sea, and was drowned. He then fled to Coccalus, king of Egypt who caused him to be suffocated in a hot bath, to prevent Minos's making war against him on his account.

DÆMON, a name given by the ancients to certain spirits, or genii, which

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appeared to men, either to do them service, or injury. The Platonists distinguish between gods, dæmons, and heroes. The gods are those whom Cicero calls *Dii majorum gentium*. The dæmons are those whom we call angels. See *Angel*.

Christians, by the word dæmon, understand only evil spirits or devils; but it is difficult to say what the ancient Hebrews meant by it. The Mahometans allow several sorts of dæmons.

DÆMONIAC, a person supposed to be possessed with an evil spirit, or dæmon.

DÆMONIACS, in church history, a branch of the Anabaptists, whose distinguishing tenet is, that the devils shall be saved at the end of the world.

DAFFODIL, the same with the Narcissus. See *Narcissus*.

DAFFODIL-LILLY, the lilio-narcissus. See *Lilio-Narcissus*.

DAILY, every day, the same with diurnal. See the article *Diurnal*.

DAIRY, among farmers, &c. a room or apartment where milk is kept, and manufactured into butter, cheese, &c.

The milk being poured out of the milking-pails into proper vessels, is there suffered to rest a night or two, according as the wheather is more or less hot, during which the cream will rise to the top, and form a thick coat on the surface. This must be carefully taken off by an utensil called a skimming-dish, and put into the churn, and there agitated for a considerable time: when this agitation has been continued long-enough to produce the desired effect, they open the churn, and with both hands gather it well together, take it out of the butter-milk, and lay it into a very clean bowl, or earthen-pan; and if the butter be designed to be used sweet, they fill the pan with clean water, and work the butter in it to and fro till it is brought to a firm consistence of itself, without any moisture. When this has been done, it must be scotched and sliced over with the point of a knife, every way as thick as possible, in order to fetch out the smallest hair, mote, bit of rag, strainer, or any thing that may have happened to fall into it: they then spread it thin in a bowl, and work it well together with such quantity of salt as they think fit; and make it up into dishes, pounds, half pounds, &c. The newer the butter is, the more wholesome and pleasant it is; and that which is made in May is esteemed the best.

Cheese is made by curdling the milk with rennet, pressing out all the serum or whey, by means of a cheese-press, and laying the cheese to dry. See *Cheese*.

DAM, a boundary or confinement.

DAM, or DYKE. See *Dyke*.

DAMA, the fallow-deer, in zoology, a species of the deer-kind, distinguished by its ramose and compressed, or palmated horns.

DAMAGE, in law, hurt, or hindrance attending a person's estate: but in common law, it is a part of what the jurors are to enquire of in giving a verdict for the plaintiff or defendant, in a civil action.

DAMASK, a silk stuff with a raised pattern, so as that the right side of the damask is that which hath the flowers raised or satined.

DAMASK should be of dressed silk, both in warp and woof; and in France, half an ell in breadth: they are made at Chalons in Champagne, and in some places in Flanders, as at Tournay, &c. entirely of wool, three-eighths of an ell wide, and twenty ells long.

DAMASKEENING, or DAMASKING, the art of beautifying iron, steel, &c. by making incisions therein, and filling them up with gold and silver wire; chiefly used for adorning sword-blades, guards and grips, locks of pistols, &c.

Damaskeening partakes of the mosaic, of engraving, and of carving; like the mosaic, it has inlaid work; like engraving, it cuts the metal, representing divers figures; and as in chasing, gold and silver is wrought in relieve.

* DAMIEN (ROBERT FRANCIS) famous for having wounded and attempted to assassinate Lewis XV. the French king, was born of mean parents, in a hamlet, in the diocese of Arras. He was servant to an officer at the siege of Philippsburg, and at length entered a college of Jesuits as a domestic, but left it, and afterwards entered himself there again; he left it again, and after having gone through many different stations of life, he held many extravagant discourses on the disputes which then agitated the church and state, and several times attempted to destroy himself, discovering in all his actions a disordered mind. At last he returned to Paris, and on the third of January, 1757, went to Versailles; and on the 5th, between five and six in the evening, struck the king with a kind of pen-knife, as he was getting into his chariot, surrounded by his courtiers. The unhappy wretch being
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D A M

laid hold of, immediately declared he had some accomplices, but said that they were a great way off, and he could not find them; but being pressed to name them, said that he could not, and must not, and that he was proof against the most dreadful torments. The king having referred the examination and trial to the grand chamber, Damien was removed to the prison of the palace, on the 18th of January, and shut up in the tower of Montgomeri, where he was fixed on a bed of singular make, and the utmost care taken to preserve his life. He obstinately persisted in declaring that he had no accomplices, which being communicated to the attorney-general, he gave it as his opinion, that Damien should be condemned to suffer the same punishment as Ravallac had done; but that first he should be put to the torture. On the 26th of March, this unhappy wretch appeared on the *fallete* (a seat for the criminal) before all his judges, and seemed undaunted at the presence of that august assembly, looked upon them with resolution, and steadily preserved an uncommon presence of mind. On Monday, the 28th, he was brought up to the chamber, where he was to be put to the torture to make him confess. He there heard his sentence read with the same intrepidity. At length, on his being brought to the scaffold, he there denied, with great resolution, that there was any one concerned with him. They first burned his right hand, then tore off his flesh with red hot pincers, and poured oil, melted lead, and rosin into his wound. At every part of this infernal punishment he screamed out, and then looked quietly at his torn and burnt members. At last they proceeded to quartering him. After which all the parts of his mangled body were burned to ashes, and they dispersed in the air.

DAMNATA TERRA, among chemists, the same with *caput mortuum*. See *Caput*.

DAMPS, in natural history, noxious steams and exhalations, frequently found in mines, pits, wells, and other subterraneous places. The pernicious damps in mines shew abundantly, that nature affords inflammable air in some cases; and we have found by experiments, that art can do the same, and that, very probably, on the same principles with the natural. Sir James Lowther, having collected the air of some of these damps in bladders, preserved it so well, that when brought up to London, it would take fire at the

D A N

flame of a candle, on being let out at the orifice of a piece of tobacco-pipe. It is well known to all that are versed in chemical experiments, that most metals emit a great quantity of sulphureous vapours, during the effervescence they undergo in the time of their solutions, in their respective menstruums: this vapour, being received into bladders, in the same manner with the natural air of Sir James Lowther, has been found to take fire, in the like way, on being let out in a small stream, and answered all the phenomena of the natural kind.

DANCE, an agreeable motion of the body, adjusted by art to the measures or tune of instruments, or of the voice.

DANCETTE, in heraldry, is when the out-line of any bordure, or ordinary, is indented largely, the largeness of the indentures being the only thing that distinguishes it from indented. See *Indented*.

DANTELE, in heraldry, the same as dancette.

* **DANTZICK**, a city of Poland in Regal Prussia, of which it is the capital. It is seated on the western bank of the Vistula, and on the frontiers of Pomerania, not far from the Baltic Sea. It is surrounded with a good wall. The houses are built of stone or brick, six or seven stories high, and the streets are pretty large. At the end of every street there are wells for the use of the inhabitants; and the public buildings in general are very elegant. The Roman Catholics and Lutherans are established by law, but the last are most numerous, for the chief magistrates, and the greatest part of the burghers are protestants. There are twenty churches in Dantzick, among which the great church is remarkable for its fine organ, pulpit, and front. There is likewise a great number of convents, a fine academy, and an excellent library. The *stadt-house* is a handsome building, with a high tower, and an excellent clock. The exchange and the arsenal are likewise worth notice. The former has a noble hall, adorned with some very good pictures. In the arsenal is a prodigious quantity of all manner of military implements, and the effigy of king Sigismund stretched dead on a tomb; and near it the effigy of count Egmont, armed cap-a-pee, on horseback. The fortifications consist of very broad walls, deep ditches, and twenty bastions. The gates are elegantly built, and have each three draw-bridges. At the mouth of the Vistula, are two strong forts, with a high tower,

D A P

tower, and a lantern to direct the ship's coming into the harbour.

The jurisdiction of the town extends four miles round, and the garrison, which is kept in it, is maintained at the expence of the inhabitants, who have the power of coining money, with the king's head on one side, and the city arms on the reverse. The inhabitants pay an annual tribute to Poland for its protection, and for having their liberties maintained. Before the year 1070 Dantzick was only inhabited by a few fishermen, but since that time it has been continually encreasing in grandeur, trade and riches; but most remarkably so within these two hundred years. The principal foreign trade is corn, in which respect it may be called the granary of Europe. This is brought in part from Pomerania, but chiefly from the inland parts of Poland, which abounds more than any other country with grain. In 1734 the Russians besieged and bombarded this city, under the conduct of general Munich, because it would not acknowledge Augustus III. for their sovereign, but on the contrary received and acknowledged Stanislaus I. for their king. This last, who was in it at that time, found means to escape out of it, upon which the inhabitants capitulated and submitted, acknowledging Augustus, and agreeing to become his loyal subjects. It is one hundred and seventy miles north of Warsaw, two hundred and fifty north-west of Cracow, and seven hundred and fifty north east of Paris. Long. 19. 5. E. Lat. 54, 22. N.

* **DANUBE**, the most celebrated river in Europe, except the Volga, running a course of near one thousand eight hundred miles. It rises near Eschingen, a village in the principality of Furstenberg, crosses Suabia, Bavaria, Austria, Hungary, Servia, and Bulgaria, and falls into the Black Sea by two mouths. This river, which begins to be navigable at Ulm in Suabia, receives many lesser streams as it passes along, and washes a great number of considerable towns and cities.

DAPHNE, in botany, a genus of plants, said to be a strong cathartic, and too rough to be given with safety.

* **DAPHNE**, in fabulous history, the daughter of the river Peneus, who being beloved by Apollo, and flying from him to preserve her chastity, was, on her intreaties, changed into a laurel, whose leaves Apollo immediately consecrated to bind his temples, and made that tree the reward of poetry.

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DAPPLE-BAY, in the manege; when bay horses have marks of a dark bay, they are called dapple-bays.

DAPPLE-BLACK; when a black horse has got spots or marks more black or shining than the rest of his skin, he is called a dapple-black.

DARNEL, the lolium. See *Lolium*.

DART, in astronomy, geometry, &c. See *Sagitta*.

DATA, among mathematicians, a term for such things or quantities as are given or known, in order to find other things thereby that are unknown. Euclid uses the word data, of which he hath a particular tract, for such spaces, lines, and angles, as are given in magnitude, or to which we can assign others equal.

In algebra, the given quantities, or data, are generally expressed by the first letter of the alphabet, and the unknown by the last letters; thus, if the problem be, From the sum and product of two quantities given, to find the quantities themselves, the quantities are represented by y and z ; and $y \times z = a$, the sum given, and $y z = b$, the product given. See *Equation*.

DATA, expresses, in philosophy and medicine, any quantity, which for the sake of a present calculation is taken for granted to be such, without requiring an immediate proof for its certainty, called also the given quantity, number, or power.

DATE, in law, is the description of the day, month, year of our Lord, and year of the reign of the king, in which a deed or other writing was made. Anciently deeds had no dates but of the month and year, and now, if in the date of any deed, the year of our Lord is right, though the year of the king's reign be wrong, it shall not prejudice. An antedate is a date prior to the real time when the instrument was passed.

DATE, *DaSylys*, the fruit of the phoenix, or great palm-tree. See *Phoenix*.

DATIVE, among grammarians, the third case in the declension of nouns. It is called dative, because usually governed by a verb implying something to be given to some person. In English, the dative is expressed by the signs *to* or *for*.

DATURA, thorn-apple, in botany, a genus of plants. The thorn-apple is narcotic, and dangerous to be taken internally; but a cataplasm of its leaves and seed is recommended for burns.

DAUCUS, the carrot. See *Carrot*.

DAVIT,

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DAVIT, in naval affairs, a long beam of wood thrust out across from over the ship's fore-castle to draw up the flocks of the anchor clear from the ship's side.

DAUPHIN, a title belonging to the eldest son of France, and heir presumptive of the crown, on account of the province of Dauphiny, which, in 1343, was given to Philip of Valois, on this condition, by Humbert, dauphin of the Viennois.

DAY, according to the most obvious sense of the word, is that space of time during which it continues to be light; in contradistinction to night, being that partition of time wherein it is dark; but the space of time in which it is light, being somewhat vague and indeterminate, the time between the rising and the setting of the sun is usually looked on as the day; and the time which lapses from its setting to its rising again, the night. The word day is often taken to include the night also; or to denote the time of a whole apparent revolution of the sun round the earth, in which sense it is called by some a natural day, and by others an artificial one: but to avoid confusion, it is usual to call it in the former sense simply the day, and in the latter a nychthemeron, by which term that acceptation of it is aptly denoted, as it implies both day and night. The nychthemeron is divided into twenty-four parts, called hours, which are of two sorts, equal and unequal, or temporary. See *Hour*.

Different nations begin their day at a different hour: thus the Egyptians began their day at midnight, from whom Hippocrates introduced that way of reckoning into astronomy, and Copernicus and others have followed him: but the greatest part of astronomers reckon the day to begin at noon, and count twenty-four hours, till the noon of the next day, and not twice twelve, according to the vulgar computation. The method of beginning the day at midnight prevails also in Great Britain, France, Spain, and most parts of Europe.

In several parts of Germany, they begin their day at sun-setting, and reckon on till it sets next day, calling that the twenty-fourth hour: these are generally termed Italian hours. The Jews also began their nychthemeron at sun-setting; but then they divided it into twice twelve hours, as we do, reckoning twelve for the day, be it long or short, and twelve for the night; so that their hours continually varying with the day and night, the hours of the day were longer than that of the night, for

D E A

one half year, and the contrary the other, from whence their hours are called temporary: those at the time of the equinoxes became equal, because then those of the day and night are so. The Romans also reckoned their hours after this manner, as do the Turks at this day. This kind of hours are called planetary, because the seven planets were anciently looked upon as presiding over the affairs of the world, and to take it by turns each of these hours, according to the following order: Saturn first, then Jupiter, Mars, the Sun, Venus, Mercury, and last of all the Moon, hence they denominated each day of the week from that planet whose turn it was to preside the first hour of the nychthemeron. Thus assigning the first hour of Saturday to Saturn, the second will fall to Jupiter, the third to Mars, and so the twenty-second of the same nychthemeron will fall to Saturn again, and therefore the twenty-third to Jupiter, and the last to Mars: so that on the first hour of the next day, it will fall to the sun to preside; and by the like manner of reckoning, the first hour of the next will fall to the Moon; of the next to Mars; of the next, to Mercury; of the next, to Venus: hence the days of the week came to be distinguished by the Latin names of *Dies Saturni, Solis, Lunæ, Martis, Mercurii, Jovis*, and *Veneris*; and among us, by the names of Saturday, Sunday, Monday, &c.

DAYS of Grace, those granted by the court at the prayer of the plaintiff or defendant in whose delay it is.

DAYS of Grace, in commerce, a customary number of days allowed for the payment of a bill of exchange, &c. after it becomes due. Three days of grace are allowed in England, ten in France and Dantzic; eight at Naples; six at Venice, Amsterdam, Rotterdam, and Antwerp; four at Franckfort; five at Leipzig; twelve at Hamburgh; six in Portugal; fourteen in Spain; thirty in Genoa, &c.

Dog-DAYS, *Dies Caniculares*. See *Canicular Days*.

Intercalary DAYS. See *Intercalary Days*.

DEACON, one of the three sacred orders of the Christian church. The word is sometimes used in the New Testament for any one that ministers in the service of God, in which sense bishops and presbyters are styled deacons; but in its restrained sense, it is taken for the third order of the clergy, as appears from the current testimony of ancient writers, who constantly

D E A

ly stile them ministers of the mysteries of Christ, ministers of episcopacy and the church, and the-like. The first institution of this order is recorded in Acts, chap. vi.

DEAD. Something dead or deprived of life. See *Death*.

DEAD-EYES, in naval affairs, certain blocks with three holes in them, whereby to draw tight the shrouds and stays of a ship.

DEAD-LIGHT, amongst seamen, a sort of strong wooden posts, made to fit the cabin-windows: they are always fixed in on any expectation of a storm, and the glass windows taken out, which might otherwise be shattered to pieces by the sea, and let great quantities of water pour into the ship.

DEAD-NETTLE, a genus of plants called by botanists *lamium*. See *Lanium*.

DEAD-RECKONING, in navigation, the judgment or estimation of which is made of the place where a ship is, without any observation of the heavenly bodies; and is performed by keeping an account of her way by the log, in knowing the course they have steered by the compass, and by rectifying all the allowances for drift, leeway, &c. according to the ship's known trim. This reckoning, however, is always to be corrected as often as any good observation can be obtained.

DEAD-TOPS, a disease incident to young trees, and cured by cutting off the dead parts close to the next good twig or shoot, claying them over as in grafting. See *Grafting*.

DEADLY-NIGHTSHADE, the belladonna of botanists. See *Belladonna*.

DEAFNESS, the state of a person who wants the sense of hearing, or has it greatly impaired. The causes of deafness are a cutting off the external ear, or an obstruction of the auditory passage, from wax, or other thing; from a rupture of the membrane of the tympanum, or when it is corroded, or ulcerated, or the auditory nerve is obstructed or compressed. External causes or falls from high places; excessive noise, such as the explosion of cannon; likewise acute diseases near their state, which are like to terminate by a critical hæmorrhage. With regard to the cure, if the obstruction be in the external cavity of the ear, it is discernable by the sight. If there is occasion to syringe the ear, a decoction of sage and rosemary flowers will be proper, with equal parts of water and white-wine; but great caution

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should be used. Hoffman says, deafness sometimes arises from a slackness of the auditory nerves, which often happens from too great a humidity, which, if neglected, will terminate in a perpetual and incurable deafness, and may be dispersed, if taken in time, by proper cephalics and sudorifics. Heister informs us that medicinal waters drank in the summer-time pretty largely, are the best means as preservatives, and for curing disorders of the ears; and that they often perform more than any other remedies whatever.

DEAL, a thin kind of fir planks, of great use in carpentry. Deals are rendered much harder, by throwing them into salt-water as soon as they are sawed, keeping them three or four days, and afterwards drying them in the air or sun; but neither this nor any other method yet known, will preserve them from shrinking.

DEAN, an ecclesiastical dignity in cathedral and collegiate churches, and head of the chapter. As there are two foundations of cathedral churches in England, the old and the new, so there are two ways of creating deans. Those of the old foundation, founded before the suppression of monasteries, as the deans of St. Paul's, York, &c. are raised to that dignity after the manner of bishops, the king sending his conge d'elire, the chapter electing, and the king granting his royal assent, the bishop confirms him, and gives his mandate to install him. Those of the new foundation, whose deanries were raised upon the ruins of priories and convents, such as the deans of Canterbury, Durham, Ely, Norwich, Winchester, &c. are donative, and installed by virtue of the king's letters patent, without either election or confirmation. Canonists distinguish between deans of cathedral and those of collegiate churches. The first, with their chapter, are regularly subject to the jurisdiction of the bishop. As to the latter, they have usually the contentious jurisdiction in themselves, though sometimes this belongs to them in common with the chapter. There are cathedral churches which never had a Dean, and in which the bishop is the head of the chapter, and in his absence, the Archdeacon: such are the cathedrals of St. David and Landaff. There are also Deans without a chapter, as the dean of Battle in Suffex, dean of the arches, &c. and deans without a jurisdiction, as the dean of the chapel royal. In this sense the word is applied to the chief of certain peculiar churches or chapels.

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Rural DEAN, called also archpresbyter, originally exercised jurisdiction over ten churches in the country, but their office is now lost in that of the archdeacons and chancellors.

DEAN and CHAPTER, the bishop's council to assist him in the affairs of religion, and to assent to every grant which the bishop shall make to bind his successors. As a deanry is a spiritual dignity, a man cannot be a dean and prebendary of the same church.

DEATH, *Mors*, the separation of the soul from the body; in which sense it stands opposed to life, which consists in the union thereof. In law there is a natural death and a civil death: natural, where nature itself expires; civil, where a person is not actually dead, but adjudged so by law. Thus, if any person, for whose life an estate is granted, remains beyond sea, or is absent seven years, and no proof made of his being living, he shall be accounted naturally dead.

DEATH-WATCH, in zoology, an insect nearly of the size of the common louse, frequent among old wood furniture. The beating of a watch is the love note of these animals, when the male or female woo each other.

DE BENE ESSE, a latin phrase used in our law in a doubtful meaning, as to take or do a thing *de bene esse*, is to allow it at present to be well done; but when it comes to be more fully examined, then to stand or fall according to the merit of the thing.

DEBENTURE, a kind of certificate signed by the officers of the customs, which entitles a merchant exporting goods to the receipt of a bounty or drawback.

DEBENTURE is likewise used in the exchequer, and given to the king's servants, for the payment of their wages.

DEBET, among merchants, the sums due to them for goods sold on credit, for which they have charged their journal or ledger. It is more particularly understood of the remainder of debts, part of which has been paid on account.

DEBET, among book-keepers, is used to express the left hand page of the ledger; to which are carried all articles supplied or paid on the subject of an account.

DEBILITY, among physicians, a relaxation of the solids, occasioning oftentimes weaknesses and faintings.

DEBT, *Debitum*, in law, any thing due to another: or the action brought for recovering the same.

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DEBTOR, one who owes any thing to another, in contradistinction to creditor, which is the person to whom the debt is owing.

DEBTOR, in merchants accounts. See *Book-Keeping*.

DECAGON, a plane figure in geometry having ten sides and ten angles; and if all the sides are equal, it is called a regular decagon, and may be inscribed in a circle. The sides of a regular decagon are, in power and length, equal to the greatest segment of an hexagon inscribed in the same circle, and cut in extreme and mean proportion.

DECALOGUE, the ten precepts of commandments delivered by God to Moses, after engraving them on two tables of stone. The Jews, by way of excellence, call these commandments the ten words, from whence they had afterwards the name of Decalogue. The church of Rome has struck the second commandment quite out of the decalogue, the reason of which may be easily conceived, and to make their numbers complete, hath split the tenth into two.

DECAMPING, in military affairs, the marching of an army from the ground where it before lay encamped. See *Camp*.

DECANDRIA, in the Linnæan system of botany, a class of plants, the great characteristic of which is, that they have hermaphrodite flowers, with ten stamina in each.

DECANTATION, among chemists, &c. the gently pouring off a liquor from its feces, by inclining the lip or canthus of the vessel.

DECEIT, *Dolus*, in law, a subtle trick, stratagem, or device, to which may be added all manner of craft and collusion, or underhand practice, used to defraud another.

DECEMBER, in chronology, the last month of the year, containing thirty-one days, and so called as being the tenth month of the Roman year, which commenced with March. See *Year and Month*.

DECENVIRI, in Roman antiquity, ten magistrates chose annually at Rome, to govern the commonwealth instead of consuls, with an absolute power to make laws for the people. There were also other decenviri, created on frequent emergencies, to manage and regulate certain affairs, as conducting colonies, presiding at feasts, taking care of sacrifices, &c.

DECENNALIA, ancient Roman festivals celebrated by the emperors, every

D E C

tenth year of their reign, with sacrifices, games, and largesses for the people.

DECIDUOUS, an appellation chiefly used in respect to plants: thus, the calyx or cup of a flower is said to be deciduous, when it falls along with the flower-petals. Again, deciduous leaves are those which fall in Autumn, in contra-distinction to those of the ever-greens, which remain all the winter.

DECIMAL ARITHMETIC, the art of computing by decimal fractions, first invented by Johannes Regiomontanus, and used by him in the construction of his tables by fines.

DECIMAL FRACTIONS, those whose denominator is 1, with one or more cyphers; as, 10, 100, 1000, 10000, &c. Thus, 5-10, 6-100, 7-1000, &c. are decimal fractions.

In the writing of decimal fractions we usually omit the denominator, as only consisting of unity with cyphers annexed; and in lieu thereof, a point, or comma, is prefixed to the numerator. Thus, 5-10 is written 5 : 46-100, .46. So .125 expresses an hundred twenty-five parts any thing supposed to be divided into 1000 parts.

As cyphers on the right hand of integers increase their value decimally; as, 2, 20, 200, &c. so when set on the left hand of decimal fractions, they decrease the value decimally; as 5, 05, 005, &c. When set on the left-hand of integers, or on the left of decimals, they signify nothing, but only to fill up places, thus, .5000 or 0005 is but five tenths, or five units.

To reduce any vulgar fraction, as suppose 5-8, to a decimal fraction of the same value, whose denominator shall be 1000; say, by the Rule of Three, as 8, the denominator of the vulgar fraction is to 5 the numerator: so will 1000, the denominator assigned, be to a 4th term, which, by working, will be found to be .625; and therefore 625-1000, or 625, is a decimal of the same value with the former fraction 5-8.

The common operations in decimals are performed as in the vulgar rules, regard being had only to the particular notation, to distinguish the integral from the fractional part of a sum.

In addition and subtraction of decimals, the points being all placed under each other, the figures are to be added, and subtracted as in common arithmetic; and when the operation is done, so many figures of the sum, or remainder, are to be noted for decimals, as there are places of decimals in

D E C

the greatest given numbers. An example will make this clear.

Addition of Decimals.

44256	24,421
439	15,024
745	3,712
031	12,531
10	7,2
4	
	62,888
2,15756	

Subtraction.

From 67,9
Take 24,876
Rem. 43,024
From 23,1462
Take 13,07
12,0762

For multiplication of decimals, observe to cut off just so many decimal parts from the product as there are decimals in both factors. The work is the same as in integers. Thus,

Multiplication of Decimals.

1472	365	3,650
175	122	621
7360	730	3650
10304	730	7300
1472	365	21900
0257600	044530	2266,650

Note, in the first and second examples the products only amount to six and five places; for this reason cyphers are prefixed to make up the numbers of decimal places in the two factors respectively.

In division of decimals, proceed in all respects as in dividing of integers, and, when the operation is finished, mark as many places in the quotient for decimals, as, with the number of decimals in the divisor, are equal to the decimal places of the dividend.

22)8.030(365	22)8.030(365
66	66.
143	143
132	132
110	110
110	110
...	...
22)8.030(0365	73.2)83.219(1.13
66	732
143	1001
132	732
110	2699
110	2196
...	503

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There are, however, certain cases in division of decimals which require some farther management: as, first, where the divisor is a decimal fraction, and the dividend is an integer; add, or annex, as many or rather more cyphers to the dividend than there are places in the divisor: thus $365)22,0000(60.2$. For there being three places of decimals in the divisor, and four in the dividend, there will be but one in the quotient. Secondly, Where the divisor is a mixed number, and the dividend a whole number, add at least as many cyphers to the dividend, as there are places in the divisor: Thus, $365)22,0000(60.2$.

DECIMATION, a punishment inflicted by the Romans on such soldiers as behaved themselves cowardly in the field. The names of all the guilty were put into an urn or helmet, and as many were drawn out as made the tenth part of the whole number, and these were put to the sword, and the others saved.

DECIPHERING, the art of finding the alphabet of a cipher. See *Cipher*. Every language has, besides the form of its characters, something peculiar in the place, order, combination, frequency, and the number of the letters; to all which particular regard is to be had in deciphering.

DECKS, in ship-building, the planked floors on which the guns rest, and the men walk. First and second rate ships, and the largest order of the third rate, are furnished with three decks, distinguished by the names of the upper, middle, and lower-decks, the last of which is however, commonly termed, absurdly enough, the gun deck: besides these three, there is a quarter-deck and fore-castle, which are on the same line, but are at some distance from each other, leaving a vacancy in the middle, which is called the waist. Above the hinder or aftmost part of the quarter deck there is yet another deck, called the poop, which extends nearly over half of the quarter-deck, and forms a roof for the captain's cabin, called the coach.

Flush-DECK, or a **DECK flush fore and aft**, one laid from stem to stem, with one floor, without any heights only the gradual rising of the floor from the middle towards the two ends.

DECLAMATION, a speech made in public, in the tone and manner of an oration.

DECLARATION, in law, a formal shewing in writing the ground of complaint of the plaintiff, in an action against the defendant.

DECLENSION, in grammar, an in-

flexion of nouns according to their divers cases nominative, genitive, dative, &c. It is a different thing in most of the modern languages, which have not properly any cases, from what it is in the ancient Greek and Latin.

DECLINATION, in astronomy, the distance of any celestial object, or point in the heavens, from the celestial equinoctial, either north or south, in degrees, minutes, &c. measured on a meridian, or circle of declination.

The greatest declination of the sun, or of the ecliptic, was first, as we know of, observed by Pytheas, at Mastilia, about 324 years before Christ; who, observing that the height of a gnomon was to its shadow, when the sun was in the meridian, as 31951.1-half to 90000, from thence concluded the sun's greatest declination to be 23 deg. 52 min. 41 sec. And Gassendus found the solstitial shadow of the same length as it had been observed by Pytheas, 2000 years before: and so he concluded that the sun's greatest declination is constant. But from a comparison of the several observations concerning this matter, the sun's greatest declination is commonly accounted 23 deg. 30 min.

DECLINATION of the Sea-Compass, or *Needle*, its variation from the true meridian of any place.

DECLINATORIES, instruments for taking the declinations, inclinations, and reclinations of planes; and they are of several kinds.

DECLINING DIALS, those whose planes stand perpendicularly to the horizon, and decline, that is, do not face directly the four cardinal points. See *Dial*.

DECLIVITY, the reverse of acclivity. See *acclivity*.

DECOCTION, in pharmacy, the boiling simples, or other drugs, to extract their virtues for some medicinal purpose. The general subjects of decoction are animals and vegetables, and sometimes minerals, as antimony and quicksilver. The liquors which serve to boil them, are water, wine, vinegar, milk, and whey.

DECOMPOSITION, in chemistry and pharmacy, the reduction of a body into its principles or component parts. See *Analysis*.

DÉCORATION, in architecture, whatever adorns a building, either without-side or within.

DECORUM, in architecture, the suitability of a building, and its several parts and ornaments to the station and occasion.

DECOUPLE, in herakdrdy, the same as uncoupled.

D E D

DECOY. In a naval chace, it is usual for small ships of war to disfigure themselves in such a manner by painting, as to be mistaken for merchantmen, or ships of the enemy, in order to deceive and provoke the adversary to chace, at which time they are careful, by altering the trim of the ship, which is easily done, to prevent her from sailing fast, although they have a great sail abroad, and appear extremely anxious to escape.

DECOY, a place made for catching wild fowl.

DECOY DUCK, a duck that flies abroad, and lights into company of wild ones, which she allures into the decoy.

DECREE, a decision of the Lord Chancellor, or an order made by a superior power for the regulation of an inferior.

DECREEES of Councils, the laws made by them to regulate the doctrine and policy of the church.

DECREET, in the law of Scotland, a final decree of the lords of session, from which an appeal only lies to parliament.

DECREMENT, in heraldry, the wane of the moon from the full to the new.

DECREPITATION, in chemistry, the act of calcining salt over the fire, till it ceases to crackle. The design of this is to free the salt from the superfluous moisture: but as it is thereby rendered porous, and apt to imbibe the humidity of the air, it must always be kept very close afterwards.

DECREPITATION is also applied to the crackling of the salts during the operation.

DECRETAL, in the canon law, a letter of a pope, determining some point in the ecclesiastical law. The decretals compose the second part of the canon-law.

DECUPLE PROPORTION, that of ten to one. See *Proportion*.

DECURIO, in Roman antiquity, a commander of ten men in the army, or the chief of a decury.

DECUSSATION, a term in geometry, optics, and anatomy, signifying the crossing of any two lines, rays, or nerves, when they meet in a point, and then go on separately from one another.

DECUSSORIUM, a surgeon's instrument, which, by pressing gently on the dura mater, causes an evacuation of the pus collected between the cranium and the above-mentioned membrane, through the perforation made by the trepan.

DEDICATION, a solemn devoting or setting apart, a thing to the service of God, and the purposes of religion.

D E F

The Feast of DEDICATION, or rather the feast of the saint or patron of a church, was celebrated formerly not only by the inhabitants of the place, but by those of all the neighbouring villages. The custom is still retained in some places under the names of wakes or vigils.

DEDICATION, in matters of literature, the inscribing a book, poem, &c. generally to some person of distinction, as a mark of the author's respect for the person to whom he dedicates his work.

DEDUCTION, in commerce, a subtracting a little sum paid, from a greater remaining yet unpaid.

DEED, a written instrument comprehending some contract, bargain, or agreement, between the parties thereto, in relation to the matter therein contained. The validity of a deed consists in three principal things, viz. writing, sealing and delivery. There are two kinds of deeds, viz. deeds indented, and deeds poll; which names chiefly import the shape of them, the one being cut in and out at top, and the other plain.

DEER, *Cervus*, in zoology. See *Cervus*.

DEER-HAYS, large nets made of cords to catch deer.

DE FACTO something actually in fact, in contra distinction to *de jure*, where a thing is only so in justice, but not in fact: as a king *de facto*, is a person that is in actual possession of a crown, but has no legal right to the same; and a king *de jure* is the person who has a just right to the crown, though he is out of possession thereof.

DEFAMATION, slanderous words, for which the slanderer is punishable, either by action upon the case at common law, or by statute, or in the ecclesiastical court. No damages are given in the ecclesiastical court, but the punishment is by way of penance.

DEFAULT, in law, is generally taken for non-appearance in court, at a day assigned; but imports any omission of that which we ought to do, for which judgment may be given against the defaulter. In the usual sense, if the plaintiff in a suit makes default in appearance on a trial, he will be non-suited; and where a defendant makes default, judgment shall be had against him by default. Jurors making default in their appearance, are to lose and forfeit issues.

DEFECTIVE, an appellation given to things which want some of the properties that naturally they ought to have.

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D E F

DEFECTIVE NOUNS, are those which want one of the numbers, or one or more cases. See *Noun*.

DEFEISANCE, or **DEFEASANCE**, in our law, a condition relating to some certain deed, which being performed, the deed is defeated and rendered void, as if it had never been made.

DEFENCE, in fortification, all sorts of work that cover and defend the opposite posts; as flanks, casemates parapets, and faussebrays.

Line of DEFENCE, a supposed line drawn from the angle of the curtain, or from any other part in the curtain, to the flanked angle of the opposite bastion. See *Curtain* and *Bastion*.

A line of defence represents the flight of a musket-ball from the place where the musketeers stand, to scour the face of the bastion, and ought never to exceed the reach of a musket.

DEFENCE, in law, a plea, or what the defendant ought to make after the plaintiff's count, or declaration, viz. that he defends all the wrong, force, and damages where and when he ought, &c.

DEFENCES, in heraldry, the weapons of any beast as the horns of a stag, the tusks of a wild boar, &c.

DEFENDANT, in law, the person who is sued in an action personal. See *Action*.

DEFENDER of the Faith, a title belonging to the king of Great Britain, as Catholic does to the king of Spain, Christian to the king of France, &c. This title was first given by pope Leo X. to king Henry VIII. for writing against Luther.

DEFERENTIA VASA, two white, solid, flattened tubes, one lying on the right side, the other on the left, from the epididymes, of which they are continuations: each of them runs up in the cellular vagina of the spermatie vessels, as high as the openings in the abdominal muscles; the blood vessels lying forward, and the vas deferens behind them. Their use is to carry the semen from the epididymes to the vesiculæ seminales; and, in the coitus, to discharge it into the urethra.

DEFICIENT, signifies much the same with defective. See *Defective*.

DEFILE, in fortification, a straight narrow passage, through which a company of horse or foot can pass only in file, by making a small front.

To DEFILE, is to reduce an army to a small front, in order to march through a defile.

DEFILING a lodgement. See *Englact*.

D E F

DEFINITE, in grammar, is applied to an article that has a precise determinate signification; such as the article *the* in English, *le* and *la* in French, &c. which fix and ascertain the noun they belong to some particular, as *the queen*, *le regine*; whereas in the quality of *king*, *de roy*, the articles *of* and *de* mark nothing precise, and are therefore indefinite.

DEFINITION, the shewing the meaning of one word by several others not synonymous terms.

Definitions which take place in compound ideas only, are of two sorts; the definition of the name, which is the explanation of what any word means; and the definition of the thing, which explains in what the nature of that thing consists.

The rules for a good definition are: 1. A definition must be universal, or adequate, that is, it must agree to all the particular species or individuals that are included under the same idea. 2. It must be proper, and peculiar to the thing defined, and agree to that alone. These two rules, being observed, will always render a definition reciprocal with the thing defined. 3. A definition should be clear and plain; and indeed it is a general rule concerning the definition both of names and things, that no word should be used in either of them, which has any difficulty in it. 4. A definition should be short, so that it must have no tautology in it, nor any words superfluous. 5. Neither the thing defined, nor a mere synonymous name should make any part of the definition.

DEFINITION in rhetoric, a short but comprehensive explanation of a thing.

The definitions of the orator differ much from those of the logician and philosopher: the orators take a large compass, and define things more ornamentally: thus man is a curious work of an Almighty Creator, framed after his own image, endued with reason, and born with immortality: but this rhetorical definition, in strictness, arrives nearer to the nature of a description, than any accurate definition.

DEFLAGRATION, in chemistry, the kindling or setting fire to a salt, mineral, &c.

DEFLECTION of the rays of light, a property which Dr. Hook observed in 1675, and read an account of, before the Royal Society March 18, the same year.

This is the same property which the great sir Isaac Newton calls inflection. See *Inflection*.

DEFLUCTION, in medicine, the falling of humours from a superior to an inferior.

rior part of the body. See *Catarrh* and *Phthisis*.

DEFLUCTION *on the Eyes*. See *Eye*.

DEFORMITY, the want of uniformity necessary to constitute the beauty of an object.

DEGLUTITION, in medicine, the act of swallowing the food, performed by the means of the tongue driving the aliment into the oesophagus, which, by the contraction of the sphincter, protrudes the contents downwards.

DEGRADATION, the depriving a person of a dignity or honour, and taking away the title, badge, and privileges of it.

DEGRADATION, in painting, expresses the lessening the appearance of distant objects in a landscape, in the same manner as they would appear to an eye placed at that distance from them. See *Perspective* and *Landscape*.

DEGREE, in geometry, a division of a circle, including a three hundred and sixtieth part of its circumference.

DEGREE of *Longitude*. See *Longitude*.

DEGREE of *Latitude*. See *Latitude*.

A degree of the meridian on the surface of the globe is variously determined by various observers. Mr. Picart measured a degree in the latitude of $49^{\circ} 21'$, and found it equal to 57060 French toises. But the French mathematicians, who have lately examined Mr. Picart's operations, assure us, that the degree in that latitude is 57183 toises. Our countryman, Mr. Norwood, measured the distance between London and York, and found it 905751 English feet, and finding the difference of latitudes $2^{\circ} 28'$, determined the quantity of one degree to be 367196 English feet, or 60 English miles, 288 yards. Mr. Maupertuis measured a degree in Lapland, in the latitude of $66^{\circ} 20'$, and found it 57438 toises. A degree was likewise measured at the equator by other French mathematicians, and found to contain 56767.8 toises. Whence it appears, that the earth is not a sphere, but an oblate spheroid. See *Earth*, *Spheroid*, &c.

DEGREE, in the civil and canon law, an interval in kinship, by which proximity and remoteness of blood are computed.

DEGREE, in chemistry, the state or intenseness of fire.

DEGREES, in music, the little intervals whereof the concord, or harmonial interval, are composed.

DEGREE, in the universities, a quality conferred on the students or members

as a testimony of their proficiency in the arts or sciences, and entitling them to certain privileges. The degrees are bachelor, master, and doctor; instead of which last, in some foreign universities, they have a licentiate.

DEHORS, in the military art, all sorts of out-works placed at some distance from the walls of a fortification, the better to secure the main places.

* DEJANIRA, in fabulous history, the daughter of Oeneus king of Ætolia, whom Hercules won from Achelous, and made her his wife; but travelling with her through Ætolia, they had occasion to pass a river, when Nessus the centaur offering Hercules his service to carry her over, he accepted it, and crossed the river before him. Nessus offered violence to Dejanira, upon which her husband pierced him with an arrow dipped in the blood of the Lernæan hydra. Nessus when ready to expire, gave his bloody garment to the princess, assuring her it was a remedy to cure her husband if ever he proved unfaithful. Some time after Dejanira suspecting his fidelity, sent him the coat, which he had no sooner put on than he was filled with the most excruciating torments, when being unable to support his pains, he retired to mount Oeta, and erecting a pile of wood, set fire to it, and threw himself into the flames, upon which Dejanira killed herself in despair.

DEINCLINERS, or DEINCLINING DIALS, such as both decline and incline, or recline at the same time. See *Dial*.

DEISM, the system of religion acknowledged by the deists. See *Deists*.

DEISTS, those persons in Christian countries, who acknowledging all the obligations and duties of natural religion, disbelieve the Christian scheme, or revealed religion. They are so called from their belief in God alone, in opposition to Christians.

DEITY, a term synonymous with God. See *God*.

DELEGATES, commissioners appointed by the king under the great seal to hear and determine appeals from the ecclesiastical court.

DELETERIOUS, an appellation given to things of a poisonous nature. See *Poison*.

DELF, a quarry or mine, where either stone or coal is dug; but is more particularly used for the veins of coal lying under ground, before it is dug up. A delf,

D E L

delf, or delve of coals, also denotes a certain quantity when dug.

DELINEATION, or **DELINEATING**. See *Designing*.

DELINQUENT, a guilty person, or one who has committed some fault, or offence.

DELIQUIUM, in chemistry, the solution of any body, when exposed to a cool or damp place, by the humidity it attracts from the air. The salt of tartar dissolved in the above manner is called oil of tartar per deliquium.

DELIRIUM, in physic, an incapacity in the organs of sensation to perform their functions in a proper manner, so that the mind does not reflect upon or judge of external objects as usual.

This frequently happens in fevers, from too impetuous a motion of the blood, which so far alters the secretion of the brain, as to disorder the whole nervous system.

DELIVERY, in medicine, the bringing forth a perfect foetus or child from its mother's womb. Delivery may happen at the seventh, eighth, ninth, tenth, and eleventh month, but not later, though some physicians maintain, that a delivery may be legitimate at the fourteenth. Humanity prompts us to give what assistance we can, besides the manual operation to the sex, in hard labour; for although provident Nature has taken such good care for the propagation of the human species, that the labour pains are seldom attended with much danger; yet it sometimes happens, that the birth is very difficult and tedious, in which case alone a man-midwife ought to be employed.

DELPHINIUM, lark's spur, in botany, a genus of plants, to which we do not find any particular virtues ascribed.

DELPHINUS, in astronomy, a constellation, of the northern hemisphere, whose stars in Ptolemy's and Tycho's catalogues are ten, and Mr. Flamsteed's eighteen.

DELTOIDES, in anatomy, a thick triangular muscle of the arm, being one of the three elevators. See *Elevator*.

DELUGE, an inundation or overflowing of the earth.

We have several deluges recorded in history, as that of Ogyges, which overflowed almost all Attica: and that of Deucalion, which drowned all Thessaly in Greece; but the most terrible was that which is called the universal deluge, or Noah's flood, which overflowed and de-

D E M

stroyed the whole earth, and out of which only Noah and those with him in the ark escaped.

The account which Moses gives of the deluge is short and plain.

Many objections, however, have been made to it, for which we refer the reader to Isaac Vossius de *Ætati Mundi*, and unto which many learned men have written answers; but we believe, it neither can be proved, nor has ever been attempted to be proved, that the universal deluge was produced without a miracle. It must be acknowledged, that it was a very extraordinary one, and particularly remarkable in the fall of the waters for forty days, and in their evaporation, or return into the deep and air, in what manner soever this may have been effected. We confess that this terrible event involves almost inexplicable difficulties, as well according to the system which maintains it to be universal, as that which supposes it to be only particular; and since it is necessary to admit a chain of miracles in both systems, we had better, surely, adhere to the common opinion of the fathers and interpreters in all ages and communions, than hunt after new ways which engage us in perplexities equal to those which we endeavour to avoid. For if it is our design, by allowing the system of a particular deluge, to stop the mouths of libertines, and secure the authority of the Holy Scriptures; how should we succeed, while we offer violence to the text, and make it say that the deluge covered but a part only of the earth, while Moses and all the sacred authors who have spoken of it, shew so distinctly the universality of it?

DEMAIN, or **DEMESNE**, in its common acceptance, is used for the lands round a manor-house, occupied by the lord. See *Manor*.

DEMAIN, or **DEMESNE**, in law, is commonly understood to be the lord's chief manor-place, with the lands thereto belonging, which he and his ancestors have, time out of mind, kept in their own manual occupation, for the maintenance of themselves and their families. See *Manor*.

DEMAND, in law, the calling upon a person for any thing that is due. There are two kinds of demands, the one in deed, and the other in law. And these are again divided into three sorts; one in writing, without speaking, as in every writ of præcipe; one other without writing;

D E M

ing, being a verbal demand of the person who is to perform something ; and another made without either words or writing, which is termed a demand in the law, as in cases of entries on lands, &c. And as an entry upon land and taking distress for rent, are a demand in law of the land and rent, so the bringing an action of debt for money due on a bond, is a demand in law of the debt. Debts and claims are to be demanded in time by the statute of limitations, or they will be lost by law.

DEMANDANT, in law, the plaintiff in all real actions, wherein lands, &c. is demanded ; for these actions are by demands, as personal actions are by plaints.

DEMI, a word much used in composition with other words to signify half. In words borrowed from the Latin we use *femi*. See *Semi*.

DEMI BASTION, a fortification having only one face and one flank. See *Bastion*.

DEMI-CANON *Lowest*, the name of a piece of ordnance generally about six inches bore, 5400 pound weight, ten or eleven feet long, and carrying a shot of about thirty pounds weight. It carries point blank 156 paces.

DEMI-CANON *Ordinary* is six inches and an half bore, twelve feet long, and weighs 5600 pounds.

DEMI-CANON *of the lowest Size*, is six inches three quarters bore, twelve feet long, and weighs 6000 pounds weight. It shoots point blank 180 paces.

DEMI-CULVERIN, a piece of ordnance usually four inches and an half bore, 2700 pounds weight, ten feet long, and carrying point blank 175 paces.

DEMI-CULVERIN *of the least Size*, is four inches and a quarter bore, ten feet long, and 2000 pound weight. It carries a ball of four inches diameter, and of nine pounds weight, and its level range is 174 paces.

DEMI-CULVERIN *of the largest Sort*, is four inches and three quarters bore, ten feet 1-3d long, and weighs 3000 pounds weight. It carries a ball of four inches and an half diameter, weighing twelve pounds eleven ounces, point blank 178 paces.

DEMI-GOD, &c. See *God*, *Hero*, &c.

DEMI-LUNE, or **HALF-MOON**, a small flanked bastion, placed before the point of a bastion when it is too weak.

DEMI-QUAVER, a note in music, two of which are equal to a quaver. See *Semi-Quaver* and *Quaver*.

D E M

DEMI-SEMI-QUAVER, in music, the shortest note, two of them being equal to a semi-quaver. See *Semi-Quaver*, *Cbass*, *rafter*, &c.

DEMOCRACY, the same with a popular government, wherein the supreme power is lodged in the people : such were Rome and Athens of old ; but as to our modern republics, Basil only excepted, their government comes nearer to aristocracy than democracy.

DEMOISELLE, in ornithology, a bird of the crane-kind, something less than a heron, known also by the name of the dancing bird.

DEMONSTRABLE, a term used to signify that a thing may be clearly proved.

DEMONSTRATION, a method of reasoning, whereby the mind clearly perceives the agreement or disagreement between the ideas it considers. This knowledge, though it be certain, is not so clear and evident as intuitive knowledge. It requires pains and attention, and steady application of mind, to perceive the agreement or disagreement it considers ; and there must be a progression by steps and degrees, before the mind in this way can arrive at certainty. Before demonstration, there was a doubt, which in intuitive knowledge cannot happen to the mind that has its faculty of perception left to a degree capable of distinct ideas, no more than it can be a doubt to the eye that can distinctly see white and black, whether this ink and paper be all of a colour.

It has generally been taken for granted, that mathematics alone is capable of demonstrative certainty ; but wherever the mind can perceive the agreement or disagreement of any two ideas, by an intuitive perception of the agreement they have with any intermediate ideas, there the mind is capable of demonstration, which is not limited to the ideas of figures, numbers, extension, or their modes. There are two things required in just demonstration ; first, that every proposition of which it consists, considered separately, be true ; secondly, that the consequences drawn from other foregoing things, necessarily flow from them ; or that all the consequences be contained in the antecedents or premises. Demonstration is of two kinds, the one *a priori*, the other *a posteriori*. Demonstration *a priori*, which alone, to speak properly, is demonstration, is that by which the effect is demonstrated by its cause ; as when we prove the existence of light by the existence of the sun. Demon-

demonstration a posteriori, is when we demonstrate the cause by the effect; as when we prove the existence of the sun from the existence of light. To this kind of demonstration may also be reduced the demonstration which is made from the remote cause; as when one proves that a stone doth not breathe, because it is not an animal; when it would have been more proper to have proved it by this, because it has no lungs; yet that, though nearer, is not the direct property of an animal, since many animals, as oysters, &c. have no lungs. Authors also mention another kind of demonstration, called *ostensive*; which is when a thing is demonstrated from proper principles directly, and by itself. To this they have added another kind of demonstration, which they call *deductive* to an inconvenience; which, though it be inferior to the former, yet may be of use where we cannot have an *ostensive* demonstration, as being also of inseparable necessity: and this is when we demonstrate a thing to be so, because, if it should be otherwise, either an absurdity, an impossibility, or a contradiction will necessarily follow.

DEMONSTRATIVE, in grammar, a term given to such pronouns as serve to point out a thing. Of this number are, *hic, hæc, hoc*, among the Latins; and *this, that, these, those*, in English. See *Pronoun*.

DEMULCENTS, among physicians, medicines good against acrimonious humours. Such are the roots of marsh-mallows, of white lilies, of liquorice, and of viper grass, the five emollient herbs. See *Emollient*.

DEMURRAGE, in commerce, an allowance made to the master of a ship by the merchants, for staying in a port longer than the time first appointed for his departure.

DEMURRER, in law, a stop put to any action upon some point of difficulty which must be determined by the court, before any further proceedings can be had in the suit.

DEMURRER to Evidence, is where a question of law arises thereon; as if the plaintiff in a suit gives in evidence any records, deeds, writings, &c. upon which a law-question arises, and the defendant offers to demur upon it, then the plaintiff must join in such demurrer, or waive his evidence.

DEMURRER to Indictments, is when a criminal joins issue upon a point of law

in an indictment or appeal, allowing the fact as laid to be true.

* **DENBIGH**, the chief town of Denbighshire, seated on the side of a steep rocky hill, on a branch of the river Clwyd. It was formerly fortified with a strong wall, and an impregnable castle. It is now a pretty large town, well built, and inhabited by glovers and tanners. It has a good trade, and is thought by some to be the best town in North Wales. It is governed by two aldermen, two bailiffs, and twenty-five capital burgesses. It sends one member to serve in parliament, and has a good market on Wednesdays, for corn, cattle, and provisions. It has three fairs, on May 14, July 18, and September 25, for cattle and small pedlar's-ware. It is two hundred and nine miles north-west of London. Long. 3. 33. W. Lat. 53. 15. N.

* **DENBIGHSHIRE**, a county of North Wales, is bounded on the south by Montgomeryshire; on the west by Merionethshire and Caernarvonshire; on the east by Shropshire and Cheshire, and on the north by Flintshire and the Irish Sea. It is about forty miles in length, and fifteen in breadth; and is divided into twelve hundreds, in which are fifty-seven parishes, four market-towns, six thousand four hundred houses, and thirty-eight thousand inhabitants. The air is wholesome, but cold and sharp, on account of the snow which lies long on the mountains. The soil is various, the west part being barren, and but thinly inhabited; and the eastern part is not much better, except about the river Dee. But the middle of the county, called the vale of Clwyd, is fruitful, pleasant, and well inhabited. The chief rivers are the Clwyd, the Elwy, and the Dee. The chief commodities are goats, sheep, black cattle, rye, and lead ore. The towns are Denbigh, Ruthin, and Wrexham.

DENTRITÆ, in natural history, a name given to those species of septariæ which have representations of trees, &c.

DENIER, a small French copper coin, of which twelve make a sol.

DENIZEN, in law, an alien made a subject by the king's letters patent, otherwise called *donation*, because his legitimation proceeds *ex donatione regis*, from the king's gift.

* **DENMARK**, one of the three northern kingdoms of Europe, Sweden and Norway being the other two. It lies north of Germany, from which it is divided by

Levens-Aue, and the Eiderstrom; to the west it is washed by the north-sea, on the north it has the Codan Gulph, otherwise called Cattegaf, and Schagerrack; on the east the Baltic. Between the main-land, and the large islands of Funen and Zealand, are the famous streights, namely, the Little and Great Belt; also the Oeresund, which last divides Denmark from Sweden. Near Elfsineur it is about half a mile over, and is the usual ferry from the German Ocean into the Baltic; of which, as well as of the other two, the king of Denmark has the sovereignty; for which reason, all ships passing through, are obliged to pay a toll, according to the quality of the goods with which they are laden. Denmark is divided into the peninsula of Jutland and the islands. 1. Alburgh, the capital town of which is of the same name. 2. Wiburg, the chief town of which is Wiburg. 3. Arhus, the principal place of which is called by the same name; and 4. Ripen, the chief town of which is likewise of the same name. The islands which make up the kingdom of Denmark, are Zealand, Funen, Langland, Laland, Falsier, Mona, Femereu, and Alseu, besides some which are smaller; of which the capital town, in the same order are Copenhagen, Odenfee, Ruthkopen, Naxhaw, Nykoping, Stag, Berg, and Sonderberg. They are no considerable rivers nor lakes, except Vennoe, which is twenty miles long. They have two universities, Copenhagen, and Kiel. The kingdom of Norway also belongs to Denmark, also half the duchy of Holstein, part of the duchy of Schleswick, and the counties of Oldenburg, and Delmenharst, in Westphalia. In Asia they have a factory at Tranquabar, on the coast of Malabar; in Guinea, Fredericksburgh-fort; in the West-Indies, the islands of St. Thomas, and Santa Cruz, besides Iceland in the North Sea. It is said the revenue of the king of Denmark amounts to ten millions of crowns per annum. The constitution of Denmark, from being hereditary, elective, and limited at different times, became absolute in the year 1660, when the peasants being grievously oppressed by the nobility and gentry, agreed, in conjunction with the clergy, to make the crown hereditary. Upon which the king, assembling his nobility and gentry, in a garrisoned town, compelled them to deliver up their liberties into his hands; so that ever since Denmark has been an absolute monarchy.

The predominant religion in Denmark is Lutherism, and their first reformer was John Bugenhagen, a disciple of Luther's. The bishops are not allowed to meddle with affairs of state. The bishoprics are six, viz. Copenhagen, Odenfee, Ripen, Alberg, Arhusen, and Wiburg. The Danes are well shaped, robust, ingenious, humane, and sociable. The nobility are valiant, magnificent, and easy of access. The Danish women are reckoned virtuous, well-shaped, and tolerably handsome.

DENOMINATION, a name imposed on any thing, usually expressing some predominant quality.

DENOMINATOR, in arithmetic, a term used in speaking of fractions.

The denominator of a fraction is the number below the line, shewing into how many parts the integer is supposed to be divided. Thus in the fraction $\frac{3}{4}$, the number 4 shews that the integer is divided into four parts. So in the following $\frac{a}{b}$,

$$\frac{a}{b}$$

is the denominator. See *Fraction*.

Denominator of a ratio is the quotient arising from the division of the antecedent by the consequent. Thus 8 is the denominator of the ratio 40 : 5, because 40 divided by 5, gives 8 for a quotient. It is also called the exponent of a ratio. See *Exponent*.

DENSITY of *Bodies*, that property directly opposite to rarity, whereby they contain such a quantity of matter under such a bulk. Accordingly, a body is said to have double or triple the density of another body, when their bulk being equal, the quantity of matter is in the one double or triple the quantity of matter is in the other. The densities and bulks of bodies are the two great points upon which all mechanics or laws of motion turn.

See the method of finding the specific gravities, and consequently the densities, of both solid and fluid bodies under the articles *Hydrostatical Balance*, and *Specific Gravity*.

DENSITY of the *Air*, a property that has employed the later philosophers since the discovery of the Toricellian experiment.

It is demonstrated, that in the same vessel, or even in vessels communicating with each other at the same distance from the center, the air has every where the same density. The density of the air,
ceteris

ceteris paribus, increases in proportion to the compressing powers. Hence the inferior air is denser than the superior; the density, however, of the lower air is not proportional to the weight of the atmosphere on account of heat and cold, and other causes perhaps which make great alterations in density and rarity. However, from the elasticity of the air, its density must be always different at different heights from the earth's surface; for the lower parts being pressed by the weight of those above, will be made to accede nearer to each other, and the more so as the weight of the incumbent air is greater. Hence, the density of the air is greatest at the earth's surface, and decreases upwards in geometrical proportion to the altitudes taken in arithmetical progression. See *Air*.

DENTALIUM, in natural history, a simple shell having no hinge, and formed only of one piece: it is of a figure approaching to cylindric or conic, and is sometimes crooked, sometimes straight; sometimes close at one end, sometimes open at both: its animal inhabitant is called *nercis*.

DENTARIA, tooth-wort, in botany, a genus of plants, the root of which being the only part used in medicine, is accounted drying and astringent.

DENTICLES, or **DENTILS**, in architecture, an ornament in corniches bearing some resemblance to teeth, particularly used in the Ionic and Corinthian orders.

DENTIFORM PROCESS, in anatomy. See *Pyrenoides*.

DENTIFRICE, in medicine, a remedy for rubbing the teeth, and for cleansing and absterging the gums, when replete with humours.

DENTITION, the breeding, or cutting, the teeth in children. Among all disorders which afflict children, there are none generate such grievous symptoms as difficult dentition. About five or six months after birth, the teeth generally begin to make their appearance: first, the incisores, or fore-teeth: next the canini, or dog-teeth; and, lastly, the molares, or grinders. About the seventh year there comes a new set; and at twenty-one the two inner grinders, called *dentes sapientie*, or teeth of wisdom. At the time of cutting their teeth, they slobber very much, and have a diarrhœa, which is no bad sign: but when it is difficult, especially when the canine teeth begin to be in motion, and make their way out through the gums, the

child has startings in his sleep, tumours of the gums, gripes, a looseness or costiveness, greenish stools, the thrush, fevers, difficult breathing, suffocating catarrhs, convulsions, and epilepsies, which often end in death.

It shews the dentition is like to be bad, if the child is perpetually crying, thrusts his finger into his mouth, and bites the nurse's nipples; if unequal tubercles are perceived in the gums, where the teeth are expected to appear; if there is a heat in the mouth, and the whole body; if they start without a cause, especially in sleep.

DENUNCIATION, a solemn publication or promulgation of any thing.

DEOBSTRUENTS, in pharmacy, such medicines as open obstructions. See *Detergent*.

DEODAND, in our customs, a thing devoted or consecrated to God, for the pacification of his wrath, in case of any misfortune; as a person's coming to a violent end, without the fault of any reasonable creature; as if a horse should strike his keeper, and so kill him. In this case, the horse is to be a deodand; that is, he is to be sold, and the price distributed to the poor, as an expiation of that dreadful event.

DEPART, in chemistry, a method of refining, or separating gold from silver, by means of aqua-fortis, generally called *quartation*.

DEPARTURE, in navigation, the easting or westing of a ship, with respect to the meridian it departed or sailed from; numbered in degrees, or miles, of the equator.

DEPHLEGMATED, an appellation given to spirits well freed from the phlegm.

DEPHLEGMATION, in chemistry, rectification, or the freeing of a spirit from its phlegm.

DEPILATORY MEDICINES, those applied to take off the hair; such are lime and orpiment known to be, but which ought to be used with great caution.

DEPONENT, in Latin grammar, a term applied to verbs which have active significations, but passive terminations or conjugations, and want one of their particles passive.

DEPONENT; in law, one who deposes, or makes a deposition. See *Deposition*.

DEPOPULATION, the act of committing waste.

DEPOSITION, in law, the testimony given in court by a witness upon oath. In chancery, deposition is a testimony set

down in writing, by way of answer to the interrogations exhibited in chancery, where such witness is called deponent. Depositions in one cause may be used at the hearing of another, where they are between the same parties, &c. without any motion: this is not permitted in other courts, without a special order of the court of chancery. The depositions in chancery, after the cause is determined there, may be given in evidence in a trial at bar, in any of the other courts.

DEPRECAION, in rhetoric, a figure whereby the orator invokes the aid and assistance of some one; or prays for some great evil or punishment to befall him who speaks falsely, either himself or his adversary.

DEPRESSION of Equations. See *Equation*.

DEPRESSION of the Pole. When a person sails or travels towards the equator, he is said to depress the pole, because as many degrees as he approaches nearer the equator, so many degrees will the pole be nearer the horizon. The phenomenon arises from the spherical figure of the earth.

DEPRESSOR, or DEPRIMENS, in anatomy, a name applied to several muscles, because they depress the parts they are fastened to.

DEPRESSOR LABII SUPERIORIS, or TRIANGULARIS, is a muscle that arises from the lower edge of the under-jaw, between the masseter and quadratus, and ascends by the angle of the mouth to the upper-jaw.

DEPRESSORES NASI, a pair of muscles arising from the os maxillare, above the dentes incisores; and are inserted into the extremities of the alæ, which they pull downwards.

DEPRESSORES OCULI, a pair of muscles springing from each corner of the eye, and answered by another pair of the like figure and structure, in the lower eyelid. See *Eye*.

DEPRIVATION, in the canon-law, the deposing a bishop, parson, vicar, &c. from his office and preferment.

DEPTH, in geometry, the same with altitude; though, strictly speaking, we only use the term depth to denote how much one body is below another.

DEPTH of a Battalion or Squadron, in military affairs, the number of ranks, or the quantity of men, of which each file consists in a battalion or squadron. The depth of the battalion is generally four men, and that of a squadron three.

DEPURATION, in pharmacy, the separating any fluid from all heterogeneous matter or feculencies, and thereby rendering every part of it of a similar consistence and appearance.

This operation is of three kinds, viz. decantation, despumation, and filtration. The first is performed, by only suffering the fluid to stand at rest, till every thing that will subside is collected at the bottom, and then pouring off from the sediment, by a gradual inclination of the vessel, all that part of the fluid which appears clear.

The second by adding whites of eggs, first well beat together, to the fluid to be clarified, and after a perfect commixture, making them coagulate by means of heat, and thereby carry to the surface all the heterogeneous matter, which is entangled by them in their coalescence. The impurities, together with the concretion whites of eggs, appearing as a scum on the surface of the fluid, is to be taken off with a spoon; this method is likewise called clarification.

The third called filtration, or percolation, is performed by passing, without pressure, the fluid to be purified through strainers of flannel, linen, cloth, or paper; which retaining the grosser parts or feculencies, suffer only the clearer fluid to be transmitted.

In the depuration of some fluids, two of these several methods are used conjointly; as filtering through flannel may be practised after despumation, and is indeed generally more expeditious and effectual than scumming. Filtering through paper, or flannel, is also proper to recover the fluid, which remains mixed with the sediment after decantation: and decantation is sometimes employed to make a perfect depuration of those fluids, which the flannel fails to make perfectly clear, and whose viscid consistence forbids their being filtered through paper. There are some other methods of depuration occasionally used; particularly the straining with compresure, by means of a screw press.

DEPUTATION, a mission of select persons out of a company, or body, to a prince or assembly, to treat of matters in their name.

DERELICTS, in the civil law, such goods as are wilfully relinquished by the owner.

DERELICT signifies also a thing forsaken, or cast away by the sea.

DERIVATION, in medicine, is when a humour which cannot be conveniently evacuated at the part affected, is attracted from

from thence, and discharged at some more proper place in its vicinity; or is drawn from a noble to a more ignoble part, where it is less capable of doing injury. Thus a blister is applied upon the neck to draw thither the matter, in cases of defluxions upon the eyes.

DERIVATIVE, in grammar, a word which is derived from another, called its primitive. See *Primitive*.

DERVIS, a name given to all Mahometan monks, though of different orders. The most noted among them are at the bektashi, the mevelevi, the kadri, and the feyah. The bektashi, who are allowed to marry and live in cities and towns, are obliged by the rules of their order, to visit remote lands, and to salute every one they meet with gaze, or love-songs, and with esma, or the invocation of the names of God, and humbly to wish him prosperity, which they do by repeating the word eivalah, a solemn exclamation of the wrestlers, by which the conquered yields the palm to the conqueror. The mevelevi, so called from Mevelava their founder, are used to turn round for two or three hours together, with such swiftness that you cannot see their faces: they are great lovers of music. In their monasteries they profess great humility and poverty; and when visited, make no distinction of persons: they first bring their guests coffee to drink; and if the ways have been dirty, they wash their feet and sandals. The kadri, with a peculiar superstition, emaciate their bodies; they go quite naked, except their waist, and often join hands and dance, sometimes a whole day, repeating with great vehemence, Hu! Hu! Hu! one of the names of God, till, like madmen, they fall on the ground, foaming at the mouth, and the sweat running down their faces. The feyah are wanderers, and though they have monasteries, yet they often spend their whole life in travelling: they are all distinguished among themselves by the different forms and colours of their habits; those of Persia wear blue; the solitaries and wanderers wear only rags of different colours; others carry on their heads a plume made of the feathers of a cock; and those of Egypt wear an octagonal badge of a greenish white alabaster at their girdles, and a high stiff cap, without any thing round it.

* **DERWENWATER**, earl of, and lord Kenmuir, were beheaded on Tower-hill, February, 24, 1716. The king, in his speech to the English parliament,

which met on the ninth of January, told them he had reason to believe the pretender was landed in Scotland: he congratulated them on the success of his arms in suppressing the rebellion: on the conclusion of the barrier treaty between the emperor and the States-General, under his guaranty: on a convention with Spain that would deliver the trade of England to that kingdom, from new impositions and hardships to which it was subjected in consequence of the late treaties. He likewise gave them to understand, that a treaty for renewing all former alliances between the crown of Great Britain and the States-General, was almost concluded; and he assured the commons he would freely give up all the estates that should become forfeited to the crown by this rebellion, to be applied towards defraying the extraordinary expence incurred on this occasion. The commons in their address of thanks, declared that they would prosecute, in the most rigorous and impartial manner, the authors of those destructive counsels which had drawn down such miseries upon the nation. Their resolutions were speedy, and exactly conformable to this declaration. They expelled Mr. Fortter from the house. They forthwith impeached the earls of Derwenwater, Nithsdale, Carnwath, and Wintoun; the lords Widdrington, Kenmuir, and Nairn. These noblemen being brought to the bar of the house of lords, heard the articles of impeachment read on the tenth day of January, and were ordered to put in their answers by the sixteenth. The impeachments being lodged, the lower house ordered a bill to be brought in for continuing the suspension of the habeas corpus act: then they prepared another to attain the marquis of Tullibardine, the earls of Mar and Lintlithgow, and lord John Drummond. On the twenty-first day of January, the king gave the royal assent to the bill for continuing the suspension of the habeas corpus act. He told the parliament that the pretender was actually in Scotland, heading the rebellion, and assuming the title and title of king of these realms: he demanded of the commons such supply as might discourage any foreign power from assisting the rebels. On Thursday the nineteenth day of January, all the impeached lords pleaded guilty to the articles exhibited against them, except the earl of Wintoun, who petitioned for a longer time, on various pretences. The rest received sentence of death on the ninth day of February, in the court erected in
West.

Westminster-hall, where the lord chancellor Cowper presided as lord high steward on that occasion. The countess Nithsdale and lady Nairn threw themselves at the king's feet as he passed through the apartments of the palace, and implored his mercy in behalf of their husbands: but their tears and intreaties produced no effect. The council resolved that the sentence should be executed, and orders were given for that purpose to the lieutenant of the Tower, and sheriffs of London and Middlesex. The countess of Derwenwater, with her sister, accompanied by the duchesses of Cleveland and Bolton, and several other ladies of the first distinction, were introduced by the dukes of Richmond and St. Alban's, into the king's bed chamber, where she invoked his majesty's clemency for her unfortunate consort. She afterwards repaired to the lobby of the house of peers, attended by the ladies of the other condemned lords, and above twenty others of the same quality, and begged the intercession of the house: but no regard was paid to their petition. Next day they petitioned both houses of parliament. The commons rejected their suit. In the upper house, the duke of Richmond delivered a petition from the earl of Derwenwater, to whom he was nearly related, at the same time declaring, that he himself should oppose his solicitation. The earl of Derby expressed some compassion for the numerous family of lord Nairn. Petitions from the rest were presented by other lords, moved with pity and humanity. Lord Townshend and others vehemently opposed their being read. The earl of Nottingham thought this indulgence might be granted: the house assented to his opinion; and agreed to an address, praying his majesty would reprieve such of the condemned lords as should deserve his mercy. To this petition the king answered, That on this and all other occasions, he would do what he thought most consistent with the dignity of his crown and the safety of his people. The earl of Nottingham president of the council; his brother the earl of Aylebury, chancellor of the duchy of Lancaster; his son lord Finch, one of the lords of the treasury; his kinsman lord Guernsey, master of the jewel office, were altogether dismissed from his majesty's service. Orders were dispatched for executing the earls of Derwenwater and Nithsdale, and the viscount Kenmuir, immediately: the others were reprieved to the seventh day of March.

Nithsdale made his escape in woman's apparel, furnished and conveyed to him by his mother. On the twenty-fourth day of February, Derwenwater and Kenmuir were beheaded on Tower-hill. The former was an amiable youth, brave, open, generous, hospitable and humane. His fate drew tears from the spectators, and was a great misfortune to the country in which he lived. He gave bread to multitudes of people whom he employed on his estate; the poor, the widow and the orphan, rejoiced in his bounty. Kenmuir was a virtuous nobleman, calm, sensible, resolute, and resigned. He was a devout member of the English church; but the other died in the faith of Rome: both adhered to their political principles.

DESART, a large extent of country entirely barren, and producing nothing.

The DESART, absolutely so called, is that part of Arabia south of the holy Land, where the children of Israel wandered forty years.

DESCANT, in music, the art of composing in several parts. See *Composition*, *Harmony*, *Counterpoint*, and *Melody*.

DESCENDANT, in genealogy, a term relative to ascendant, and applied to a person who is born from some other referred to: thus, mankind are said to be the descendants of Adam; and sometimes the descendants of Noah.

DESCENSION, in astronomy, is either right or oblique.

Right Descension, an arch of the equinoctial, intercepted between the next equinoctial point and the intersection of the meridian, passing through the center of the object, at its setting in a right sphere.

Oblique Descension, an arch of the equinoctial, intercepted between the next equinoctial point, and the horizon, passing through the center of the object, at its setting in an oblique sphere.

DESCENT, in general, the tendency of a body from a higher to a lower place: thus all bodies, unless otherwise determined by a force superior to their gravity, descend towards the center of the earth: the planets too may be said to descend from the aphelion to the perihelion of their orbits, as the moon does from the apogee to the perigee. Heavy bodies meeting with no resistance, descend with an uniformly accelerated motion. See *Acceleration*.

DESCENT, or DISCENT, in law, an order whereby lands, &c. are derived to any man from his ancestors.

Descent, in heraldry, is used to express the

the coming down of any thing from above; as, a lion en descent, is a lion with its head towards the base points, and his heel towards one of the corners of the chief, as if he were leaping down from some high place.

DESCRIPTION, such a strong and beautiful representation of a thing, as gives the reader a distinct notion of it.

DESERTER, in the military sense, a soldier who runs away from his regiment or company.

DESIDERATUM, a desirable perfection in any art or science: thus, it is a desideratum with the blacksmith, to render iron fusible by a gentle heat, and yet preserve it hard enough for ordinary uses; with the glass-man and looking-glass maker, to render glass malleable; with the clock-maker, to bring pendulums to be useful, where there are irregular motions; with the brazier and copper-smith, to make malleable solder; with the shipwright, to build vessels that will sail under water; with the diver, to procure manageable instruments for conveying fresh air to the bottom of the sea, sufficient for respiration and the burning of lights; with the assay-master, to melt or copel ores of metals immediately, without the use of bellows or furnaces; and with the carvers and joiners, to fashion wood in moulds like plaster of Paris, or burnt alabaster.

DESIGN, in a general sense, the plan, order, representation, or construction of a building, book, painting, &c. In building, the term ichnography may be used, when by design is only meant the plan of a building, or a flat figure drawn on paper: when some side or face of the building is raised from the ground, we may use the term orthography: and when both front and sides are seen, in perspective, we call it scenography.

DESIGN, in the manufactories, expresses the figures wherewith the workman enriches his stuff, or silk, and which he copies after some painter, or eminent draughtsman, as in diaper, damask, and other flowered silk and tapestry, and the like.

DESIGN is also used, in painting, for the first idea of a large work, drawn roughly, and in little, with an intention to be executed and finished in large. The art of painting has been by some of the greatest masters divided into the design, or draught, the proportion, the expression, the chiaro-obsuro, the ordonnance, the colouring, and the perspective.

DESIGN, in painting, is the simple counter, or outlines of the figures or groups intended to be represented, or the lines that terminate or circumscribe them; such design is sometimes drawn in crayons, or ink, without any shadows at all; sometimes it is hatched, that is, the shadows are expressed by sensible outlines, usually drawn across each other with the pen, crayon, or graver. Sometimes again, the shadows are done with the crayon, rubbed so as that there do not appear any lines: at other times the grains or strokes of the crayon appear, as not being rubbed: sometimes the design is washed, that is, the shadows are done with a pencil in Indian ink, or some other liquor; and sometimes the design is coloured, that is, colours are laid on much like those intended for the grand work. The essential requisites of a design are correctness, good taste, elegance, character, diversity, expression, and perspective. Correctness depends on the justness of the proportions, and knowledge of anatomy. Taste is a certain manner of correctness peculiar to one's self, and is not to be defined. Elegance gives a delicacy that not only strikes persons of judgment, but communicates an agreeableness that pleases universally. The character is what is peculiar to each object, wherein there must be diversity, inasmuch that every thing has its peculiar character to distinguish it.

The expression is the representation of an object, according to the circumstances it is supposed to be in. Perspective is the representation of the parts of a painting, or a figure, according to the situation they are in with regard to the point of sight. See *Drawing*, &c.

DESIGNING, the art of delineating or drawing the appearance of natural objects, by lines, on a plane.

DESPOTICAL, in general, any thing uncontrouled and absolute; particularly used for an arbitrary government, where the power of the prince is unlimited, and his will a law to his subjects: such are those of Turkey, Persia, and most of the Eastern governments: and even those of Europe, if we except the republics and England. The dastardly Swedes have lately suffered their king to become despotic.

DESPUMATION, a term for the clarifying a liquor, by the skimming off its froth.

DESSERT or **DESART**, a service of fruits and sweetmeats.

DESSICATIVE, or **DESICCATIVE**,
in

in pharmacy, an epithet applied to such topical medicines as dry up the humours flowing to a wound or ulcer.

DESTINY, the same with fate. See *Fate*.

DESUDATION, in medicine, a profuse and inordinate sweat, succeeded by an eruption of pustules, called sudamina, or heat pimples. See *Sudamina* and *Hidro*.

DETACHED PIECES, in fortification, are such outworks as are detached, or at a distance from the body of the place; as demilunes, ravelines, bastions, &c. In designing or painting, the figures are said to be well detached, when they stand free and disengaged from each other.

DETACHMENT, in military affairs, a certain number of soldiers drawn out from several regiments or companies equally, to be employed as the general thinks proper, whether on an attack, at a siege, or in parties to scour the country. A detachment of two or three thousand men, is a command for a brigadier; eight hundred for a colonel; four or five hundred for a lieutenant-colonel. A captain never marches on a detachment with less than fifty men, a lieutenant, an ensign, and two serjeants. A lieutenant is allowed thirty and a serjeant; and a serjeant ten or twelve men. Detachments are sometimes made of entire squadrons and battalions.

DETACHMENT, in naval affairs, a certain number of ships chosen by an admiral, from the rest of the fleet or squadron, and appointed to execute some particular commission.

DETERGENTS, *Detergentia*, in pharmacy, such medicines as are softening and adhesive, and also by a peculiar activity, conjoined with a suitable configuration of parts, are apt to abrade, and carry along with them such particles as they lay hold on in their passage. Medicines of this kind are supposed to cleanse, and fill up with new flesh, all ulcerations and foulnesses occasioned thereby, whether internal or external.

DETERMINATE PROBLEM, in geometry, that which was but one, or at least a limited number of answers.

DETERMINATION, in mechanics, signifies nearly the same with the tendency or direction of a body in motion.

DETERMINATION, among school-divines, an act of divine power, limiting the agency of second causes, in every instance, to what the Deity predestinated concerning them. See *Predestination*.

DETINUE, in law, an action that lies

against one who has got goods or other things delivered to him to keep, and afterwards refuses to deliver them.

DETINUE of Charters, An action for detinue lies for deeds and charters which make the title to lands.

DENOTATION, in chemistry, the noise and explosion which any substance makes upon the application of fire to it. It is also called fulmination.

* **DETTINGEN, Battle of**, June 26, 1743. The troops which the king of Great Britain had assembled in the Netherlands, began their march for the Rhine in the latter end of February; and in May they encamped near Hoech on the river Mayne, under the command of the earl of Stair, who sent major-general Bland to Franckfort with a compliment to the emperor, assuring him, in the name of his Britannic majesty, that the respect owing to his dignity should not be violated, nor the place of his residence be disturbed. Notwithstanding this assurance the emperor retired to Munich, though he was afterwards compelled to return by the success of the Austrians in Bavaria. The French king, in order to prevent the junction of the British forces with prince Charles of Lorraine, ordered the marechal de Noailles to assemble sixty thousand men upon the Mayne, while Coigny was sent into Alsace with a numerous army, to defend that province and oppose prince Charles, should he attempt to pass the Rhine. The marechal de Noailles having secured the towns of Spire, Worms, and Æppenheim, passed the Rhine in the beginning of June, and posted himself on the east side of that river; above Franckfort. The earl of Stair advanced towards him, and encamped at Killinbach, between the river Mayne and the forest D'Armstadt; from this situation he made a motion to Aschaffenburg, with a view to secure the navigation of the Upper Mayne; but, he was anticipated by the enemy, who lay on the other side of the river, and had taken possession of the posts above, so as to intercept all supplies. They were posted on the other side of the river, opposite to the allies, whose camp they overlooked; and they found means, by their parties and other precautions, to cut off the communication by water between Franckfort and the confederates. The duke of Cumberland had already come to make his first campaign, and his majesty arrived in the camp the ninth day of June. He found

found his army, amounting to forty thousand men, in danger of starving: he received intelligence, that a reinforcement of twelve thousand Hanoverians and Hessians had reached Hanau; and he resolved to march thither, both with a view to effect the junction, and to procure provision for his forces. With this view he decamped on the twenty-sixth day of June. He had no sooner quitted Aschaffenburg than it was seized by the French; and he had not marched above three leagues, when he perceived the enemy to the number of thirty thousand, had passed the river farther down, and were drawn up in order of battle at the village of Dettingen, to dispute his passage. Thus he found himself cooped up in a very dangerous situation. The enemy had possessed themselves of Aschaffenburg behind, so as to prevent his retreat: his troops were confined in a narrow plain, bounded by hills and woods on the right, flanked on the left by the river Mayne, on the opposite side of which the French had erected batteries that annoyed the allies on their march; and in the front a considerable part of the French army was drawn up, with a narrow pass before them, the village of Dettingen on their right, a wood on the left, and a morass in the center. Thus environed, the confederates must either have fought at a very great disadvantage, or surrendered themselves prisoners of war, had not the duke de Gramont, who commanded the enemy, been instigated by the spirit of madness to forego these advantages. He passed the defile, and advancing toward the allies, a battle ensued. The French horse charged with great impetuosity, and some regiments of British cavalry were put in disorder; but the infantry of the allies behaved with such intrepidity and deliberation, under the eye of their sovereign, as soon determined the fate of the day: the French were obliged to give way, and repass the Mayne with great precipitation, having lost about five thousand men killed, wounded, or taken. Had they been properly pursued before they recovered themselves from their first confusion, in all probability they would have sustained a total overthrow. The earl of Stair, proposed, that a body of cavalry should be detached on this purpose; but, his advice was overruled. The loss of the allies in this action amounted to two thousand men. The generals Clayton and Monroy were killed, the duke of Cumberland, who exhibited uncommon proofs of courage,

was shot through the calf of his leg: the earl of Albermarle, general Huske, and several other officers of distinction, were wounded. The king exposed his person to a severe fire of cannon as well as musquetry: he rode between the first and second lines with his sword drawn, and encouraged the troops to fight for the honour of England. Immediately after the action he continued his rout to Hanau, where he was joined by the reinforcement. The earl of Stair sent a trumpet to marechal de Noailles, recommending to his protection the sick and wounded that were left on the field of battle; and these the French general treated with great care and tenderness. Such generosity softens the rigour of war, and does honour to humanity.

DEVIL, an evil angel, one of those celestial spirits cast down from heaven, for pretending to equal himself with God.

DEVIL-IN-A-BUSH, a plant called *nigella*. See *Nigella*.

DEVIL'S-BIT. See *Scabious*.

DEVIL'S-MILK, a species of *tithymal*, or spurge. See the article *Tithymal*.

DEVISE, or **DEVICE**, in heraldry, painting, and sculpture, any emblem used to represent a certain family, person, action, or quality; with a suitable motto, applied in a figurative sense. See *Motto*.

The essence of a devise consists in the metaphorical similitude between the things representing and represented.

DEVISE, in law, the act whereby a person bequeaths his lands or tenements to another, by his last will and testament.

DEVOTION, *Devotio*, a sincere ardent worship of the Deity.

DEVOTION, among the Romans, a kind of sacrifice, or ceremony, whereby they consecrated themselves to the service of some person.

DEVOURING, in heraldry, is when fishes are borne in an escutcheon in a feeding posture: for they swallow all the meat whole.

DEUILLE's Piston, in hydraulics, a piston without friction, invented by Messieurs Gossiet and de la Deuille, and successfully made use of in the king of France's garden at Paris.

* **DEVONSHIRE**, a county in the west of England, with the Bristol channel on the north, the English channel on the south, Cornwall on the west, and Somersetshire and Dorsetshire on the east. It is sixty-one miles long, and fifty-four broad. It has thirty-eight market towns; three hundred and ninety-four parishes, fifty-

D E U

six thousand three hundred and ten houses, about three hundred and thirty-eight thousand inhabitants, and sends twenty-six members to parliament. The soil of this county is not naturally very fruitful, but by the help of manure it well repays the labourer's toil. The mountains are steep and rocky, and will not admit of much improvement, but then they contain mines of tin, lead, iron, and copper. The glebe and soil is different in different parts. On the eastern side it is chalky in some places, and very good for sheep and corn; but in others where it is marley it is not proper for the feeding of sheep. The southern parts have plenty of grass and corn, and may be called the garden of Devonshire: but in the north and west the land is more over-run with hills and moors. The county in general is well watered with rivers and brooks, which abound with fish, and the sea produces herrings and pilchards, which are of great advantage for home consumption, and for exportation abroad. There are chalybeate and other mineral waters.

There are here a great number of apple-trees, and the inhabitants make a great quantity of cyder of the fruit, but many drink it to such excess, that it produces a distemper not unlike the dry belly-ach. However, the exportation of it in such large quantities, as is done some years, is of great advantage to the inhabitants. This county has several trading towns and good forts; and has more boroughs than any one in England, except Cornwall. The towns which send members to parliament are the city of Exeter the capital, the boroughs of Totness, Plymouth, Hampton, Barnstaple, Plimpton, Tavistock, Ashburton, Dartmouth, Boreaston, and Tiverton. The towns which did send members to parliament, but have now lost that privilege, are Bradninch, Crediton, Exmouth, Fremington, Lydford, Modbury, Tintmouth, South Moulton, and Chipping Torrington.

DEUTERO-CANONICAL, in theology, a term applied to certain books of Scripture which were added to the canon after the rest; either because they were not wrote till after the canon was compiled, or because of some debate in regard to their canonicity. The deuterocanonical books in the modern canon, are the books of Esther, either the whole, or at least the seven last chapters of it; the Epistle to the Hebrews, those of James and Jude: the second of St. Peter, the

D E W

second and third of St. John, and the Revelations. The deuterocanonical parts of books are the Hymn of the Three Children, the Prayer of Azariah, the Histories of Sufanah, of Bell and the Dragon, the last chapter of St. Mark, the bloody sweat and appearance of the angel, related in Luke xxii. and the history of the adulterous woman in John viii.

DEUTERONOMY, a canonical book of the Old Testament, and the last of the pentateuch of Moses. This was called Deuteronomy by the seventy Greek translators, as being a recapitulation of the laws before delivered at large.

DEW, a light thin, insensible rain or mist, falling on the earth while the sun is below the horizon.

In summer, when the weather is fair, and very dry, and the earth's surface has for a considerable time been parched with the great heat of the sun, then not only the watery, but likewise other less volatile particles, as the oily and saline, are, by the power of the solar rays, carried up into the air, and fill that part of it which lies nearest to the surface of the earth; and so long as these exhalations are kept in agitation by the heat of the sun, so long nothing of them appears to the eye. But as soon as the solar heat, which at three in the afternoon is the greatest, begins to remit, the air not long after begins to grow cool, though the earth, which retains the heat communicated to it by the sun a thousand times longer than the air, being still hot, continues to exhale the agitated corpuscles; by which means there is collected a white, dense, vapour, which is cool above, but still continues warm below. This vapour, therefore, appears first in ditches and watery or marshy places, whence dispersing itself by degrees, it covers the face of the earth, in the evening and night time, with a cloud, consisting of this kind of particles, which in the morning is again dissipated by the heat of the rising sun. By all this it appears, the dew is a very compound liquid; so that nothing can be asserted of its nature, which in every circumstance will hold true. In gravel-pits, for instance, and in high, dry, heathy grounds of a large extent, there is collected but a very small quantity of this vapour, and that almost entirely water; whilst that which is collected about standing waters, fens, marshes, and fat bituminous grounds, abounding with putrified fish, and other animals, is of a quite different

ferent nature, and very often pernicious to mankind. In the Philosophical Transactions, dew is described as being like butter, of a yellowish white colour, soft, melting by being rubbed upon the hand, and growing dry by a moderate heat; of a very foetid smell in the winter; and in the spring, particularly, produced in the night time, in pretty large lumps. But the nature of dew is likewise surprisingly various, according to the different disposition of the weather, and according to the various and successive changes of the meteors in the air: for hence it comes to pass that the very minute seeds of small plants, and the invisible eggs of the smallest animalcula, are mixed with it, together with an infinite number of other things; which being all digested, fermented, putrefied, and distilled together, yields at different times principles of very different natures, and hence lead the chemists into very extraordinary opinions. The principal part, therefore, of dew is water; the rest, on account of their manifold variety, cannot possibly be described. *Boerhaave's Chem.*

DEXTER, in heraldry, an appellation given to whatever belongs to the right side of a shield, or coat of arms: thus we say, bend-dexter, dexter-point, &c.

DEY, in matters of government, the sovereign prince of Algiers, answering to the bey of Tunis.

DIABETES, in physick, that discharge of urine, when any liquor, soon after it is drank, is immoderately, and without undergoing almost any change, evacuated crude, and under the appearance of water.

In this disorder, the patient is continually afflicted with an insatiable thirst, that cannot be removed by drinking the most liberal draughts. The liquor drank is often discharged by urine, in larger quantities than it was taken into the stomach. Thus the whole body is, by this means, consumed, and as it were dissolved: though, in some patients, the loins, the thighs, the testes, and especially the feet, become a little turgid, and a certain heat is perceived in the intestines. A diabetes is a disease of the chronical kind, and depends upon the state of the kidneys: when recent, it sometimes admits of a cure; but when inveterate, and of long standing, it becomes incurable.

According to Lister, nothing more effectually contributes to the cure of this disorder, than all preparations of almonds,

and milk diet; and he himself gives us an instance of one cured of it by drinking as much wine, boiled with ginger, as his strength and condition would admit of; allowing him, at proper intervals, draughts of milk and water, to allay his thirst. According to Willis, a few or none at all have been observed to be cured of a diabetes, by astringents; and this practitioner, as he himself informs us, often prescribed, with success, the tincture of antimony, and a solution of quicklime in water, together with assafras, aniseeds, raisins, and liquorice.

DIACHYLON, in pharmacy, an emollient digestive plaster, composed of the mucilages or juices of certain herbs, litharge, and oil.

DIACODIUM, in pharmacy, a syrup prepared from the heads of poppies.

DIACOUSTICS, or DIAPHONICS, is the consideration of the properties of refracted sound, as it passes through different mediums.

DLADELPHIA, in the Linnæan system of botany, a class of plants, the seventeenth in order; comprehending all those with papilionaceous and hermaphrodite flowers and leguminous seed-vessels. See *Papilionaceous* and *Legumen*.

The distinguishing characteristic of this class is, that the stamina adhere together: forming two dissimilar bodies or filaments, the one standing upon the pistil, and the other surrounding it.

This is a very natural class, and comprehends pease, beans, vetches, liquorice, and a great many other genera. See the articles *Pease*, *Beans*, &c.

DLADEM, in antiquity, a head band, or fillet, worn by kings, as a badge of their royalty. It was made of silk, thread, or wool, and tied round the temples and forehead, the ends being tied behind, and let fall on the neck. It was usually white, and quite plain, though sometimes embroidered with gold, and set with pearls and precious stones. In latter times it came to be twisted round crowns, laurels, &c. and even appears to have been worn on divers parts of the body. See *Crown*.

DLADEM, in heraldry, is applied to certain circles, or rims, serving to inclose the crowns of sovereign princes, and to bear the globe and cross, or the fleur de lices for their crest. The crowns of kings are bound, some with a greater, and some with a less number of diadems. The bandage about the heads of Moors, on shields is also called diadem, in blazoning.

DIÆRESIS, in grammar, the division of one syllable into two, which is usually noted by two points over a letter, as *aulai* instead of *aulæ*, *disolūenda* for *dissolūenda*.

Diæresis is also the same with what is otherwise called *timefis*. See *Timefis*.

DIAGLYPHIC, the art of cutting or engraving figures on metals, such as seals, intaglios, matrices of letters, &c. or coins for medals. See *Engraving*, and *Sculpture*.

DIAGNOSTIC, that judgment of a disease that is taken from the present symptoms and condition of the patient.

DIAGONAL, in geometry, is a line drawn across from angle to angle in any figure; and is by some called the diameter. See *Diameter*.

DIAGRAM, in geometry, a scheme for explaining and demonstrating the properties of any figure, whether triangle, square, circle, &c. See *Triangle*, *Square*, &c.

DIAL, or **SUN-DIAL**, an instrument serving to measure time by means of the shadow of the sun.

This word is formed from the Latin, *dies*, day, because indicating the hour of the day. The ancients also call it *scia-thericum*; from its shewing the hour of the shadow.

Sun-dials are differently denominated, according to their different situation, and the figure of the surfaces whereon they are described; as horizontal, verticle, equinoctial, polar, direct, erect, declining, reclining, cylindrical, &c.

To draw the hour-lines upon a horizontal dial.—Draw the right-line *6 A 6* (plate XVII. fig. 1.) for the east and west-line of the dial, or the hour-line of six; in the middle of this line set off *A a* equal to the proposed thickness of your style; through *A* and *a*, draw *C A E*, *c a e*, both perpendicular to *6 A 6*, and let *G C H* be parallel thereto; make the angle *C A B* equal to the given latitude, and upon *A B* let fall the perpendicular *C D*; in *A C* produced, take *C F* equal to *C D*, then make the angles *C F 1*, *C F 2*, *C F 3*, &c. equal to 15° , 30° , 45° , &c. respectively, and draw *A 1*, *A 2*, *A 3*, &c. for the hour-lines of one, two, three, &c. after noon. Take *c 11*, *c 10*, *c 9*, &c. respectively equal to *C 1*, *C 2*, *C 3*, &c. and draw *a 11*, *a 10*, *a 9*, &c. for the hour-lines of eleven, ten, nine, &c. before noon.

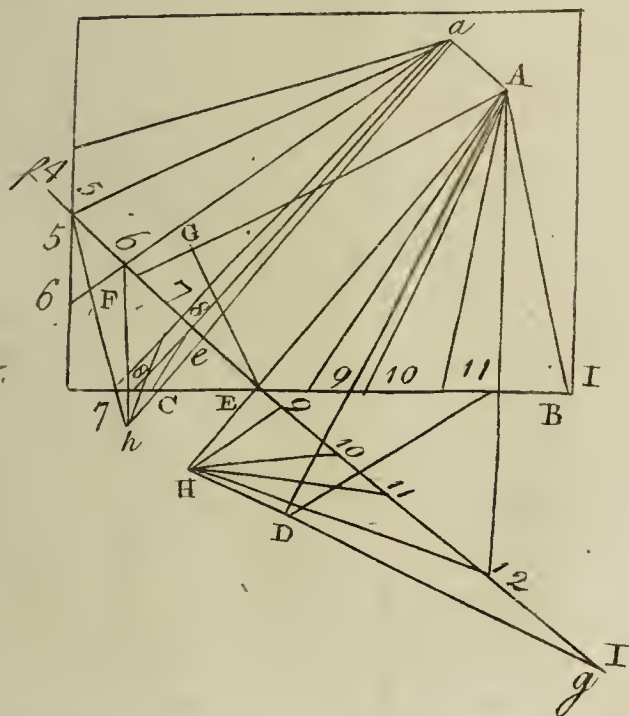
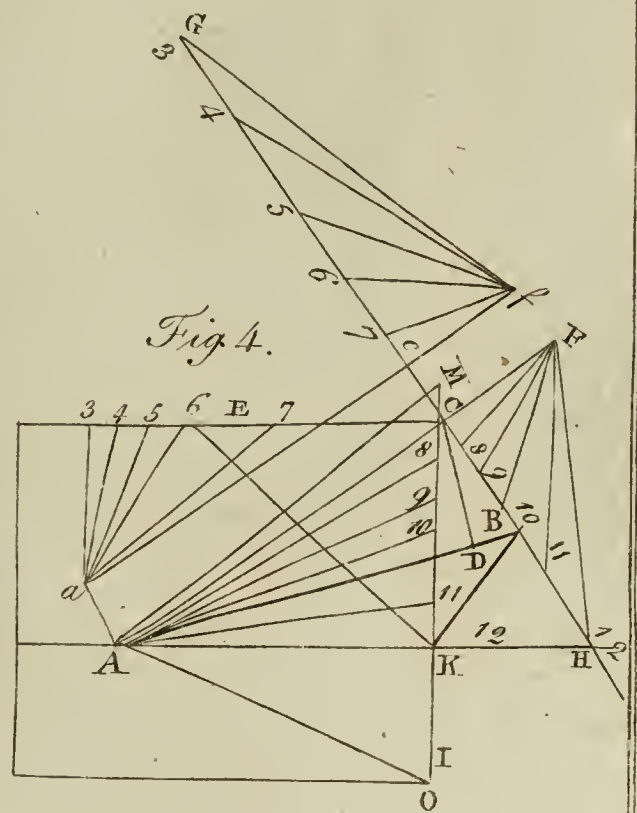
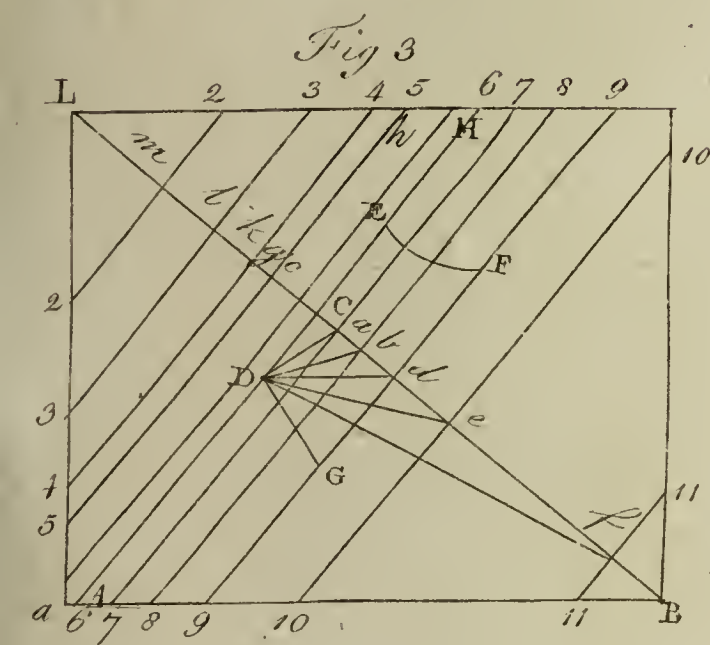
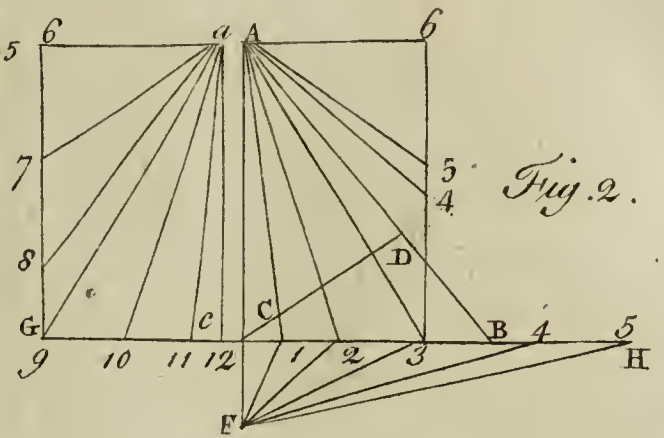
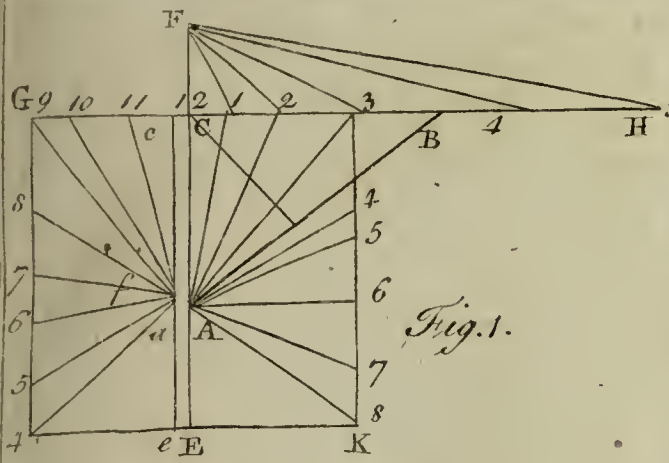
Note. The hour-lines of four or five, whose intersections with *G C H* fall with-

out the plane of the dial, may be otherwise drawn in the following manner: Take *A f* equal to the excess *A C* above *C D*, and make the angles *6 f 5*, *6 f 4*, equal to 15° , 30° , respectively; also from the points *4*, *5*, where the lines *f 4*, *f 5*, intersect *K 3*, parallel to *C E*, draw *A 4*, *A 5*, for the hour-lines of four and five; from which, by taking *6*, *7*, and *6*, *8*, equal to 6 , 5 , and 6 , 4 , &c. and drawing *A 7*, *A 8*, &c. you will also have the hour-lines of seven and eight.

The upper edge of the style, when the dial is placed in its proper position, will be parallel to the earth's axis; for the line *6 A 6*, being the east and west line of the dial, the line *C A E*, perpendicular thereto, will therefore be the north and the south line with regard to the center *A*, or in respect of that side of the style, by the shadow of which the hours after noon are pointed out; and it is evident that, as *A a* expresses the thickness of the style, the line *c a e* will be the north and south line of the dial, with regard to the center *a*, answering to the morning side of the style. Moreover, since the angle *C A B* is equal to the latitude of the place or the elevation of the pole, by construction it is evident, that when the style *C A B* is erected perpendicular to the plane of the horizon, on *A a c C*, the upper-edge thereof will pass through the pole of the world, and so be parallel to the earth's axis.

To draw the hour-lines upon an erect south-dial, for any given north-latitude: or an erect north-dial for any south-latitude; draw the right line *6 A 6* for the east and west-line of the dial (fig. 2.) or the hour line of six; in the middle of this line set off *A a* equal to the assigned thickness of your style, and from *A*, *a*, draw *A C*, *a c*, both perpendicular to *6 A 6*; also let *G C H* be parallel thereto: make the angle *C A B* equal to the complement of the latitude, and upon *A B* let fall the perpendicular *C D*: then proceed as in the horizontal dial.

To shew that the upper-edge of the style, when the dial is placed in its proper position, will be parallel to the earth's axis, we may observe in the first place, that the line *6 A 6* being the east and west-line of the dial, and parallel to the plane of the horizon, the line *A C* perpendicular thereto when the plane of the dial is erect, will also be perpendicular to the horizon: therefore, when the plane of the style, represented by the triangle *ABC*, is erected perpendicular to the plane



plane of the dial, on the line $A C$, it will coincide with the meridian (being perpendicular to the plane of the dial represented by the prime vertical) : and so the angle $C B A$ being equal to the given latitude, or the elevation of the pole, (by construction) it is evident $A B$, the upper-edge of the style when produced, will pass through the pole of the world, and so be parallel to the earth's axis.

Note. An erect north-dial, for a north-latitude, is constructed exactly in the same manner as an erect south-dial; the only difference being in the position of the dial; in the former case the line $G B$ being made the upper-edge of the dial instead of the lower.

The same may be observed with respect to an erect south dial, for a south latitude.

To draw the hour-lines upon an erect east-dial, for any proposed north-latitude; or an erect west-dial, for any south-latitude.

On the proposed plane draw the right line $A B$ (*fig. 3.*) for the horizontal line of the dial; make the angle $L A B$ equal to the complement of latitude, and perpendicular to $B L$, draw $A C H$ for the hour-line of six; take $C c$ equal to the proposed thickness of your style, and parallel to $A H$ draw $a c b$; then having assumed $D C$ at pleasure, make the angles $C D a$, $C D b$, $C D d$, &c. equal to 15° , 30° , 45° , &c. respectively, and through the points, a , b , d , &c. parallel to $A C H$, draw the lines $7 a 7$, $8 b 8$, $9 d 9$, &c. for the hour-lines of seven, eight, nine, &c. also take $c g$, $c k$, $c l$, &c. equal to $C a$, $C b$, $C d$, &c. and through g , k , l , &c. parallel to $a c b$, draw the lines $5 g 5$, $4 k 4$, $3 l 3$, &c. for the hour-lines of five, four, three, &c. The style in this case will be represented by the plane $H g g A$, or $D G F E$, whose upper-edge $G F$ produced will pass through the pole of the world.

For the dial being placed in its proper position, the plane thereof will coincide with the meridian, and the line $B A$ with the horizon; whence the angle $B A C$ being equal the proposed elevation of the pole by construction, the line $A C H$ will, it is evident, point directly to the said pole, and therefore be parallel of the earth's axis: therefore $G F$ being parallel to $A H$, it must also be parallel to the earth's axis.

Note. An erect west-dial, for a north-latitude, is constructed exactly in the same manner as an erect east-dial, provided that, instead of beginning the construction from the right end B of the plane,

you begin at the left-end A ; and that the figures expressing the hours of one, two, three, &c. in the afternoon, be placed between the said left-end and the hour-line of six.

The same may be observed with regard to an erect east-dial for any south latitude.

To draw the hour-lines upon a direct south reclining dial, for any north-latitude, or a direct north reclining dial, for any south latitude.

Draw the right-line $6 A 6$ (*fig. 1.*) for the east and west-line of the dial, or the hour-line of six; in the middle of this line set off $A a$ equal to the proposed thickness of your style; through A , a draw $C A E$, $c a e$, both perpendicular to $6 A 6$, and let $G C H$ be parallel thereto; make the angle $C A B$ equal to the excess of the reclination above the complement of latitude, and upon $A B$ let fall the perpendicular $C D$; in $A C$ produced take $C F = C D$, then proceed as with an horizontal dial.

To demonstrate that the upper edge of the style, when the dial is placed in its proper position, will be parallel to the earth's axis, we may observe, in the first place, that the line $6 A 6$, being the east and west line of the dial, and parallel to the horizon, will be perpendicular to the plane of the meridian; whence the line $C A E$, perpendicular to $6 A 6$; will be the meridian line of the dial, and the plane of the style $A C B$, when erected perpendicular to the plane of the dial on the line $A C$ will coincide exactly with the plane of the meridian. Moreover, observe that the angle $C A B$ being here equal to the excess of the reclination above the pole's distance from the zenith, it is evident that the difference between the reclination and the said angle $C A B$ will be equal to the distance of the pole from the zenith; and consequently $A B$, when produced, will pass through the pole, and so be parallel to the earth's axis.

Note. The pole elevated above the horizon of the place is also elevated above the plane of the dial: but when the reclination is less than the pole's distance from the zenith, the opposite pole will be elevated: in such case the height of the style ($C A B$) must be set off, on the contrary side of the line $6 A 6$, from the lower part of the meridian $A E$, which will then be the hour-line of twelve.

If it be required to describe a north reclining dial for a north-latitude, or a south reclining dial for a south-latitude, the method of construction will still be same; only,

ly, instead of taking the angle CAB equal to the difference between the reclination and the complement of latitude, we must take it equal to the sum of them.

If the plane of a north reclining dial be inverted, the dial will then become a south inclining dial, whose inclination is the complement of the reclination of the dial to inverted.

In like manner, a south reclining dial will become a north reclining one.

To describe the hour-lines upon a direct east reclining dial, for any north-latitude; or a direct west reclining dial, for any south latitude.—Draw the right line IK 12 (*fig. 4.*) for the north and south-line of the dial, or the hour-line of 12; perpendicular to this draw KC : make EKC equal to the given reclination, and perpendicular to KC draw CEL : take $KM=KE$, and make the angle AMK equal to the complement of the proposed latitude: join A, C , and perpendicular thereto draw GCH , in which set off Cc equal to the proposed thickness of your style; through c draw ca perpendicular to GH , and let Aa be parallel thereto: make $CB=CE$, and joining A, B , and K, B , draw CD perpendicular to AB ; in AC and ac produced, take CF and cf each equal to CD , and from F , to the point where GH intersects IK , draw F 12; then make the angles 12 F 11, 11 F 10, 10 F 9, 9 F 8, each equal to 15° , and the angle cf 7 equal to the excess of 15, above the angle CF 8: also make the angles 7 f 6, 6 f 5, &c. each equal to 15° , and draw the right lines A 11, A 10, A 9, &c. for the hour-lines of 11, 10, 9, &c.

To shew that the upper edge of the style, when the dial is placed in its proper position, will be parallel to the earth's axis, we may observe in the first place, that the plane of the triangle REC , when erected perpendicular to the plane of the dial on the line KC , will be parallel to the prime vertical, and perpendicular to the line IK , which, being the north and south-line of the dial, is parallel to the planes of the horizon and of the meridian; and therefore because the angle EKC expresses the reclination of the plane of the dial from the plane of the meridian, the line EK will be perpendicular to the plane of the horizon, and parallel to the plane of the meridian.

Now the triangles KEC, KBC , having the side $EC=BC, KC$, common, and the angles ECK, BCK , both right, will be similar and equal; therefore, when the plane of the style, represented by the triangle ABC , and the plane of the triangle KBC , are erected perpendicular to the plane of the

dial, on the lines AC, KC , respectively, the triangle AKB , as the triangles KEC, KBC , then coincide, will be parallel to the plane of the meridian. Moreover, because $BK (=KE) = KM, AK$, and the angles AKM, AKB , both right, the triangles AKM, AKB , will be equal and similar; and therefore $ABK=AMK=$ the complement of the given latitude; consequently the angle KAB being equal to the given latitude, the upper edge of the style AB , when produced, will pass through the pole of the world, and so be parallel to the earth's axis.

If it be required to describe a west reclining dial for a north-latitude, or an east reclining one for a south-latitude, the method of construction will still be the same; provided that, instead of the line IK , you begin towards the left end, and that the figures expressing the hours after noon be placed, instead of those expressing the hours before noon.

A direct west reclining dial, for a north-latitude, is constructed in the same manner as a direct east reclining one, only that the points A and C change their position (A being placed, in this case, at the left-end of the line LC , and C at the right-end of the line IK); and that (the sun not coming on the plane till after noon) the figures expressing the hours after noon be placed instead of those before noon.

The same may be observed with regard to a direct east reclining dial for a south-latitude.

To describe the hour-lines upon a direct south-dial, for any proposed north-latitude, to have also a given declination from the west; or an erect north-dial for a south-latitude, to decline from the east.

Draw the right line BC (*fig. 5.*) for the horizontal line of the dial, and perpendicular thereto draw BA ; make the angle BCA equal to the proposed latitude, and the angle CBD equal to the complement of the given declination; then, having taken BD equal to BC , draw DE perpendicular to BC ; join A, E , and perpendicular thereto draw fg , in which set off Ec equal to the proposed thickness of your style; through c draw ca perpendicular to fg , and let Aa be parallel thereto: make EF equal to ED , and joining AF , draw EG perpendicular thereto: in AE and ae , produced, take EH and eb , each equal to EG , and from H to the point where fg intersects AB produced, draw H 12; then make the angles 12 H 11, 11 H 10, 10 H 9, each equal to 15° , and the angle eb 8, equal to the excess of

15°, above the angle E H 9: also make the angles 8 b 7, 7 b 6, 6 b 5, &c. each equal to 15°, and draw the right lines A 11, A 10, A 9, a 8, a 7, &c. for the hour-lines of 11, 10, 9, 8, &c. The upper-edge of the style will, when the dial is placed in its proper position, be parallel to the earth's axis: for B C being parallel to the plane of the horizon, the line A B perpendicular thereto, as the dial is an erect one, will be perpendicular to the said plane; therefore the plane of the triangle B D E, when erected perpendicular to the plane of the dial, on the line B E, being perpendicular to the line A B, and parallel to the plane of the horizon, the line B D will be perpendicular to the plane of the prime vertical (because the angle D B E expresses the complement of the plane's declination from that plane), and consequently parallel to the plane of the meridian; therefore the plane of the prime vertical must coincide with the plane of the meridian. Again, since B D is equal to B C, (by construction) the angles A B D and A B C, both right ones, and A B common, it is evident that the angle A D B is equal to the angle A C B, equal to the given latitude, and consequently that the line D A will be parallel to the earth's axis.

But the triangle A E F, when the plane of the style, represented by the triangle A F E, is erected perpendicular to that of the dial, on the sub-style A E, will coincide with the triangle A D E, because D E is equal to F E, A E, common, and the angles A F E, A E D, both right.

If it were required to draw an erect south-dial, for a northern-latitude, to decline westerly, or an erect north-dial, for a southern latitude, to decline easterly; the method will still be the same, only, instead of beginning the operation on the left side of A B, you must begin on the right side.

If the plane of an erect south-dial, declining easterly, in a northern latitude, be inverted, the dial will then become an erect north-dial, declining westerly, for the same latitude; and if the plane of an erect north-dial, declining westerly, in a southern latitude, be inverted, the dial will then become an erect south-dial, declining easterly, for the same latitude.

An erect south-dial declining westerly, in a northern latitude, will become an erect north-dial declining easterly; and an erect north-dial, declining easterly, in a southern latitude, will become an erect south-dial, declining westerly.

DIALECT, an appellation given to the language of a province, so far as it

differs from that of the whole kingdom. The term, however, is more particularly used in speaking of the ancient Greek, whereof there were four dialects, the Attic, Ionic, Æolic, and Doric, each of which was a perfect language in its kind, that took place in certain countries, and had peculiar beauties.

In Great Britain, besides the grand diversity of English and Scotch, almost every county has a dialect of its own, all differing considerably in pronunciation, accent, and tone, although one and the same language.

DIALLING, the art of constructing dials. See *Dial*.

DIALLING-GLOBE, an instrument, of brass or wood, with a plane fitted to the horizon, and an index, so contrived as to give a clear illustration of the principles on which dials are made.

DIALLING-LINES, or **SCALES**, are graduated lines placed on rulers, or the edges of quadrants and other instruments, to expedite the construction of dials.

DIALLING-SPHERE, an instrument made of brass, with several semi-circles sliding over each other upon a moveable horizon: serving to demonstrate the nature of spherical triangles, as well as to give the true idea of drawing dials on all sorts of planes.

DIALOGISM, in rhetoric, the soliloquy of persons deliberating with themselves.

DIALOGUE, in matters of literature, a conversation between two or more persons, either by writing or speaking.

DIALYSIS, in grammar, a mark or character, consisting of two points, . . , placed over two vowels of a word, to separate them, otherwise they would make a diphthong, as Mosaic, &c. See *Diacritical*.

DIAMETER, in geometry, a right line passing through the center of a circle, and terminated at each side by the circumference. See *Circle*. The chief properties of the diameter are, that it divides the circumference of a circle into two equal parts. Hence we have a method of describing a semi-circle upon any line, assuming its middle point for the center. The diameter is the greatest of all chords. For finding the ratio of the diameter to the circumference. See *Circle*.

DIAMETER of a Curve, is a right line that bisects the right lines drawn parallel to one another; and are either of a finite or infinite length. Although a right line, bisecting all parallel lines drawn from one point

point of a curve to another, is taken in a strict sense only for the diameter of a curve-line; yet it may not be amiss more generally to define a diameter, in saying, that it is that line, whether right or curve, which bisects all parallels drawn from one point of a curve to another; so that, according to this every curve will have a diameter: and thence Sir Isaac Newton's curves of the second order have all either a right-lined diameter, or else the curves of some one of the conic sections for diameters: and many geometrical curves of the highest orders may also have for diameter curves of more inferior ones, and that *ad infinitum*.

DIAMETER of a Sphere, is the diameter of the semi-circle, by whose rotation the sphere is generated; in which sense it is the same with axis. See *Axis*.

DIAMETER of a Column, in architecture, its thickness just above the base.

From this the module is taken, which measures all the other parts of a column. See *Module*.

DIAMOND, Adamas, in natural history, a stone, which, though naturally colourless like the purest water, is eminently distinguished from all others of the colourless kind by the lustre of its reflection.

It is found sometimes in an angular, and sometimes in a pebble-like form. But in whatever form the diamond is found, it is the same stone, and when polished has the same qualities in proportion to its perfection and purity. The diamond, like all other transparent fossils, is liable to be tinged by metalline particles, and is sometimes found with a cast of red, sometimes blue, sometimes green, and more frequently yellow. The small diamonds are vastly the more plentiful, the others are found more and more rarely as they increase in size. As diamonds have originally, without all question, been concreted out of a fluid, it is not at all surprising, that among the various accidents such a concretion must have been attended with in the bowels of the earth, some parts of the matter should have shot into quadrangular pyramids, while other parts of it form themselves into hexangular, pyramidal, or pebble-like concretions. The diamond in its native state is sometimes bright as if polished by art, but more frequently its surface is observed with foulnesses of various kinds; and sometimes it is, as the diamond-cutters call it, veiny, that is, it has certain points inconceivably hard on its surface.

The diamond bears the force of the strongest fire unhurt, if ever so long continued in it, provided it be not removed too suddenly into the cool air, when it will sometimes crack. Exposed to the solar rays collected in the focus of a large lens, it after some time splits into several very thin flakes, like those of talc, and these soon after run into a kind of glass, which has nothing of the hardness or lustre of the diamond.

The places whence we have the diamonds are the East-Indies, in the Island of Borneo, and in the kingdom of Visapour, Golconda, Bengal; and the Brasils in the West-Indies.

The diamond, as has been observed, is the hardest of all precious stones; it can only be cut and ground by itself, and its own substance.

To bring it to that perfection which augments its price so considerably, they begin by rubbing two stones against each other while rough, after having well cemented them to the ends of two sticks or blocks called cutting-sticks, thick enough to be held in the hand. It is this powder thus rubbed off the stones, and received in a little box for that purpose, called the cutting-box, which serves to grind and polish the stones.

Diamonds are cut and polished by means of a mill, which turns a wheel of cast iron, sprinkled over with diamond dust, mixed with oil of olives.

The same dust, well ground and diluted with water and vinegar, is used in the sawing of diamonds, which is performed with an iron or brass wire as fine as a hair.

Sometimes, instead of sawing the diamonds, they cleave them, especially if there be any small shivers in them; but the Europeans rarely run the risque of cleaving, for fear of breaking them.

A rough diamond ought to be chosen uniform, of a good shape, transparent, not quite white, and free from flaws and shivers.

Shivers are caused in diamonds by this, that the miners, to get them more easily out of the vein, which winds between two rocks, break the rocks with huge iron levers, which shakes and fills the stone with shivers.

The finest diamonds now in the world are that of the Great Mogul, weighing 279 carats as has been already observed; that of the great duke of Tuscany, weighing 139 carats; and that known in France by the

the name of grand fancy, which is one of the crown jewels, weighing 106 carats; whence comes its name fancy, which is a corruption of cent. fix: that is, 106.

Valuation of Diamonds, among jewellers, is thus calculated: they suppose the value of a rough diamond to be 2 l. per carat; then to find the value of the diamonds greater weight, they multiply the square of their weight by 2, and this last product is the value of the diamonds in their rough state: thus, the value of a rough diamond, weighing 4 carats, is equal $4 \times 4 \times 2 = 16 \times 2 = 32$ l. and so in other cases.

Again to find the value of wrought diamonds, they suppose half their weight lost in the manufacturing them, and therefore multiply the square of double their weight by 2: thus the value of a wrought diamond, weighing 3 carats, is equal $6 \times 6 \times 2 = 36 \times 2 = 72$ l.

Rose Diamond, that which is quite flat underneath, with its upper part cut in divers little faces, usually triangles, the uppermost of which terminate in a point.

Table Diamond, that which has a large square face at top, encompassed with four lesser.

Brilliant Diamond is that cut in faces, both at top and bottom; and whose table, or principal face at top, is flat.

Diamond, in the glass trade, an instrument used for squaring the large plates or pieces; and among glaziers, for cutting their glass.

Diamond, in heraldry, a term used for expressing the black colour in the achievements of peerage.

DIAMORUM, in pharmacy, a preparation of mulberries and honey, used against diseases of the throat, and for stopping dysenteries, &c.

* *DIANA*, the goddess of chastity, was the daughter of Jupiter and Latona. At her request her father granted her perpetual virginity; constituted her queen of the woods and forests; and assigned her a guard of nymphs to attend her. She was also the patroness of hunting, and assisted women in labour. Diana had a great variety of names. She was called Orthia by the Spartans; Orrhosia by the Arcadians; Artemis, on account of her honour and modesty; and Cynthia and Delia, from the place of her birth. She was also called Dea Triformis, or Tergemena, on account of her triple character, of Luna in heaven, Diana on earth, and Hecate in the infernal regions; under each of which characters she was represented as of different descent, and especially in the last was des-

cribed of a very different form. Indeed Hesiod makes Luna, Diana, and Hecate, three distinct goddesses.

She was represented above the common stature, with a crescent on her forehead, a bow in her hand, and a quiver at her back; with a deer-skin fastened to her breast, and her purple robe tucked up at the knees, with golden clasps, attended by nymphs with nets and hounds. The sacrifices offered to her, were the first fruits of the earth, white hinds, oxen, and rams. The most magnificent of her temples was that of Ephesus, which was burnt on the same day in which Alexander the Great was born, in the three hundred and fifty-sixth year before Christ. It is very probable that this goddess was originally no more than the Lunar Isis of the Egyptians, who was on particular occasions represented with a crescent and full moon over her head, and that her different characters under the names of Luna and Hecate, arose from the alterations made in the attributes of that hieroglyphical symbol.

DIANÆ ARBOR, or *ARBOR LUNÆ*, in chemistry, the beautiful crystallizations of silver, dissolved in aquafortis, to which some quicksilver is added; and so called from their resembling the trunk, branches, leaves, &c. of a tree.

DIANDRIA, in the Linnæan system, a class of plants comprehending all those with hermaphrodite flowers; and only two stamina in each; such are sage, olive, phillirea, jessamine, rosemary, &c.

DIANTHUS, in botany, a genus of plants, comprehending the clove-july flowers, or carnations, the pinks, and sweet-williams; all beautiful flowers, which may be propagated by seeds or layers.

DIAPASON, in music, a musical interval, by which most authors who have wrote upon the theory of music, used to express the octave of the Greeks. See *Octave*.

Diapason, among musical instrument makers, a kind of rule or scale, whereby they adjust the pipes of their organs, and cut the holes of their flutes, hautboys, &c. in due proportion, for performing the tones, semitones, and concords just.

There is a particular kind of diapason for trumpets, serving as a standard of the different magnitudes they must have to perform the four parts of music. See *Trumpet*.

There is another for sackbuts. The bell founders have likewise a diapason, serving to regulate the size, thickness, weight, &c. of their bells.

DIAPASON DIAEX, in music, a kind of compound concord, of which there are two sorts: the greater, which is in proportion of 10 : 3; and the lesser, in that of 16 : 5.

DIAPASON DIAPENTE, in music, a compound consonance in a triple ratio, as 3 : 9. This interval, says Martianus Capella, consists of nine tones and a semi-tone, nineteen semi-tones, and thirty-eight dieses. It is a symphony made when the voice proceeds from the first to the twelfth sound.

DIAPASON DIATESSARON, in music, a compound concord, founded on the proportion of 8 : 3. To this interval Martianus Capella allows eight tones and a semi-tone, seventeen semi-tones, and thirty-four dieses.

DIAPASON DITONE, in music, a compound concord, whose terms are as 10 : 4, or 5 : 2.

DIAPASON SEMIDITONE, in music, a compound concord, whose terms are in proportion of 12 : 5.

DIAPESIS, in medicine, a transfusion of the fluids through the sides of the vessels that contain them, occasioned by the blood's becoming too much attenuated, or the pores becoming too potent.

DIAPENTE, in pharmacy, is used for a medicine compounded of five several drugs or ingredients.

DIAPERED, or **DIAPRE**, in heraldry, the dividing of a field in planes, like fret-work, and filling the same with variety of figures. This chiefly obtains on bordures, which are diapered or fretted over, and the frets charged with things proper for bordures.

DIAPHANOUS, an appellation given to all transparent bodies, or such as transmit the rays of light.

DIAPHENICUM, in pharmacy, a sort of medicine or electuary, chiefly made of dates. It purges serosities, and excites the menses. It is also used in droppies, lethargies, apoplexies, and palsies.

DIAPHORESIS, in medicine, an elimination of the humours in any part of the body through the pores of the skin. See *Perspiration*.

DIAPHORETICS, among physicians, medicines which promote perspiration. See *Alexipharmic*.

DIAPHRAGM, in anatomy, the part which separates the thorax from the abdomen; vulgarly called the midriff.

DIAPHORESIS, in rhetoric, a figure of oratory, expressing the uncertainty of

the speaker how he shall proceed in his discourse.

DIARRHODON, in pharmacy, a name given to divers compositions, in which roses are the principal ingredient.

DIARRHOEA, in medicine, a looseness, or a frequent and plentiful discharge of thin watery mucous, slimy, frothy, bilious, or blackish matter from the intestines, sometimes with, and sometimes without a mixture of the intestines.

All sorts of substances whatever possessed of any degree of acrimony, will stimulate the intestines, accelerate their peristaltic motion, invite a larger quantity of fluids to their glands, and cause a discharge of their contents by stool.

As a Diarrhoea, then may be produced by a variety of causes, we may perceive how careful physicians should be to investigate them, in order to prescribe judiciously, and to avoid doing a great deal of prejudice: for the matter must be carried off, either spontaneously, or by art, before any astringents can be administered, which seem only to be indicated, when the discharge is so exorbitant as to endanger life; or when the emissaries of the glands that open into the intestines, are too much relaxed, after the stimulating causes is perfectly eliminated. Destroying the peculiar acrimony that causes a diarrhoea, when that can be done, will bid fair to cure, or at least to alleviate the disorder.

DIARY, among traders, a day-book containing the proceedings of one day. See *Book-Keeping*.

DIARY FEVER, the same with an ephemera. See *Ephemera*.

DIASCHISM, among musicians, denotes the difference between the comma and enharmonic diesis, commonly called the lesser comma.

DIASCORDIUM, in pharmacy, a celebrated composition, so called from scoridium, one of its ingredients.

DIASEBESTEN, in pharmacy, a soft purgative electuary, of which sebestens are the principal ingredients.

DIASENNA, in pharmacy, a medicine in which senna is the principal ingredient.

DIASTOLE, among physicians, the dilatation of the heart and arteries; and stands opposite the systole, or contraction of the same parts. See *Systole* and *Heart*.

Diastole, in grammar, a figure in prosody, whereby a syllable naturally short is made long.

DIASYRMUS, in rhetoric, a kind of hyperbole, being an exaggeration of some low ridiculous thing.

D I D

DIATESSARON, in pharmacy, the name of a composition so called from the four ingredients it comprehends.

DIATONIC, an epithet given to music, as it proceeds by tones and semi-tones, both ascending and descending.

DIATRAGACANTH, in pharmacy, a name applied to certain powders, of which gum tragacanth is the principal ingredient.

DIBBLE, among gardeners, the tool, or forked stick, wherewith they set plants.

DICHOTOMY, a term used by astronomers for that phasis, or appearance of the moon, wherein she is bisected, or shews just half her disc.

Dichotomy, in botany, a term used to express that division of the branches which we see in the mistletoe; and in the greater part of the sea fucus's, in which each branch is divided into two.

DICTAMNUS, dittany, in botany, a genus of perennial plants, which grows wild in the mountainous parts of France, Italy, and Germany; from whence the white cortical part of the root is sometimes brought to us, dried, and in the form of quills.

This root, stands recommended as a stomachic, anthelmintic, alexipharmic, and as an aperient in uterine obstructions; but it is at present very rarely made use of.

DICTATE, *Dictamen*, a motion, or suggestion of a man's conscience, contrary to which if any action is performed, it is properly termed a bad one, even if the consequences should prove otherwise. See *Conscience*.

Dictate, *Dictata*, the lecture of a master, which the scholars take down in writing; whence this act of the master is termed dictating.

DICTATOR, in the policy of the ancient Romans, a magistrate invested with sovereign power.

DICTION, the phrase, elocution, or style of a writer, or speaker.

DICTIONARY, a collection of all the words of a language, art, science, &c. with their explanations, ranged in alphabetical order.

DIDACTIC, or **DIDACTICAL**, in the schools, signifies the manner of speaking, or writing, adapted to teach or explain the nature of things.

DIDYNAMIA, in the Linnæan system of botany, a very comprehensive class of plants; the fourteenth in order; the essential characteristic of which is, that there is four subulated stamina, inserted into the tube of the flower, two of which

D I E

are shorter than the others, and placed together; the antheræ being commonly hid under the upper lip of the flower, and connivent in pairs. Its genera have been divided into two series or orders, under the names of gymnospermia and angiospermia; the latter having, and the former wanting a pericarpium, or seed vessel.

To this genus belong baum, germander, lavender, thyme, betony, mint, fox glove, bear's-breech. &c.

* **DIEPPE**, is a sea-port town of Normandy in France, seated at the mouth of the river Arcques. It was almost demolished by the bombardment of the English, in 1694, but has been since rebuilt, after the manner of Versailles. The streets are wide and laid in a line. The houses are all built with bricks, and supported by arches. There are two public squares, and several fountains. It has two parishes, several religious houses, and the fathers of the Oratory have a college. The harbour is long, narrow, and crooked, and is sixteen or eighteen feet deep at high water, and contains merchant vessels of all sizes. The mole is very high and strongly built, and is near five hundred yards in length. It forms, with that of Polet, the entrance of the canal of the harbour. The castle of Dieppe is constructed in the antique manner, and stands upon a hill by the sea side. The prospect from the terraces is very agreeable. The inhabitants are laborious, and consist chiefly of seamen. The rest are employed in the ivory manufacture, toys, and bone-lace. The suburb called Polet communicates with the town by a bridge of boats, and the inhabitants are as famous for their works in horn as the others in ivory. The town has twenty gates, whereof twelve are along the quay. The manufacture of tobacco and snuff is also carried on at Dieppe. Packets go twice a week in summer, to and from Brighthelmstone and Dieppe.

DIES, or **DAY**. See *Day*.

DIESIS, in music, the division of a tone less than a semi-tone; or, an interval consisting of a less or imperfect semi-tone.

DIET, *Dietæ*, in physic, a way and method of living. The natural constitution of the body of man is such, that it can bear some changes and irregularities, without much injury: had it been otherwise, we should be almost constantly put out of order by every slight cause. This advantage arises from those wonderful communications of the inward parts, whereby, when one part is affected, another comes immediately to its relief.

D I E

Thus, says Dr. Mead, when the body is too full, nature causes evacuations through some of the outlets: and for this reason it is, that diseases from inanition are generally more dangerous than from repletion; because we can more expeditiously diminish than increase the juices of the body. Upon the same account also, though temperance be beneficial to all men, the ancient physicians advised persons in good health, and their own masters, to indulge a little now and then, by eating and drinking more plentifully than usual. But, of the two, intemperance in drinking is safer than in eating: and if a person has committed excess in the latter, cold water drank upon a full stomach will help digestion: to which it will be of service to add lemon juice or elixir of vitriol. If he has eaten high seasoned things, rich sauces, &c. then let him sit up for some little time, and afterwards sleep. But if a man happen to be obliged to fast, he ought to avoid all laborious work. From satiety it is not proper to pass directly to sharp hunger, nor from hunger to satiety: neither will it be safe to indulge absolute rest immediately after excessive labour, nor suddenly fall to hard work after long idleness. In a word, therefore, all changes in the way of living should be made by degrees.

It is also beneficial to vary the scenes of life, to be sometimes in the country, sometimes in town; to go to sea, to hunt, to be at rest now and then, but more frequently to use exercise; because inaction renders the body weak and listless, and labour strengthens it: but a medium is to be observed in all the things, and too much fatigue to be avoided; for frequent and violent exercise overpowers the natural strength, and wastes the body; but moderate exercise ought always to be used before meals. Now, of all kinds of exercise, riding on horseback is the most convenient; or if the person be too weak to bear it, riding in a coach, or at least in a litter: next follow fencing, playing at ball, running, walking. But it is one of the inconveniencies of old age, that there is seldom sufficient strength for using bodily exercise, though it be extremely requisite for health: wherefore frictions with the flesh brush are necessary at this time of life, which should be performed by the person himself, if possible; if not, by his servants.

Sleep is the sweet soother of cares, and restorer of strength; as it repairs and replaces the wastes that are made by the labours and

D I E

exercises of the day. But excessive sleep has its inconveniencies; for it blunts the senses and renders them less fit for the duties of life. The proper time for sleep is the night, when darkness and silence invite and bring it on: Day sleep is less refreshing; which rule if it be proper for the multitude to observe, much more is the observance of it necessary for persons addicted to literary studies, whose minds and bodies are more susceptible of injuries.

The softer and milder kinds of aliment are proper for children, and for youth the stronger. Old people ought to lessen the quantity of their food, and increase that of their drink: but yet some allowance is to be made for custom, especially in the colder climates like ours; for as in these the appetite is keener, so is the digestion better performed. *Mead's Monita & Præcepta.*

DIET-DRINKS, a form in physic, including all the medicated wines, ales, and wheys, used in chronic cases. They require a course or continuation to answer any intention of moment. In all acute cases they are of no use, but where the disorder of a constitution is gradually to be gained upon, much help may be had from this quarter.

DIET, or DYET, in matters of policy, is used for the general assembly of the states or circles of the empire of Germany, and of Poland, to deliberate and concert measures proper to be taken for the good of the public.

DIETIC, belonging to diet, but particularly that part of physic which treats of this subject. See *Diet*.

DIEU ET MON DROIT, that is, God and my right, the motto of the royal arms of England, first assumed by king Richard I. on a victory over the French, in 1193. to intimate that he did not hold his empire in vassalage of any mortal.

DIFFERENCE, in logic, an essential attribute belonging to any species that is not found in the genus, and is the universal idea of that species: thus body and spirit are two species of substance, which contain in their ideas something more than is in that of substance. In a body, we find impenetrability and extension; in a spirit, a power of thinking and reasoning: so that the difference of body is impenetrable extension, and the difference of a spirit is cogitation.

DIFFERENCE, in mathematics the remainder, when one number or quantity is subtracted from another.

DIFFERENCE of Longitude of two places on the earth, is an arch of the equator,

equator, comprehended between the meridians of these two places.

DIFFERENCE of *Ascension*. See the article *Ascensional Difference*.

DIFFERENCES, in heraldry, certain additaments to coat armour, whereby something is added or altered to distinguish younger families from the elder.

DIFFERENTIAL CALCULUS, in mathematics, is a method of differencing qualities, or finding an infinitely small quantity which being taken infinite times, shall be equal to a given quantity, or an infinitesimal, which is a portion of a quantity incomparable to that quantity; or, as others define it, the arithmetic of infinitely small differences between variable quantities. The foundation then of this calculus is an infinitely small quantity, or what is less than any assignable one; and therefore is accounted as nothing, the error occurring by omitting it, being less than any assignable one; hence two quantities, only differing by an infinitesimal, may be taken as equal. Thus, in astronomy, the diameter of the earth is an infinitesimal in respect to the distance of the fixed stars; and the same holds in astronomical quantities: the name infinitesimal is therefore merely relative, and involves a relation to another quantity, not any real ens or being. Now infinitesimals are called differential quantities, when they are considered as the differences of two quantities. Sir Isaac Newton calls them fluxions; considering them as the momentary increments of quantities, v. g. of a line generated by the flux of a point, or of a surface by the flux of a line, &c. The differential calculus, therefore, and the doctrine of fluxions, are the same thing under different names; the former given by M. Leibnitz, and the latter by Sir Isaac Newton, who was most undoubtedly the original inventor; notwithstanding, M. Leibnitz, is by most of the foreigners allowed to have first discovered it, about the year 1676: but the contrary to this appears very evident by the report of the committee appointed to examine the original letters and copy books of letters in the custody of the Royal Society, relating to the dispute then subsisting between Sir Isaac Newton and M. Leibnitz, concerning the invention of the method of fluxions.

DIFFORM, *Difformis*, an appellation given to things whose appearance is irregular. It is much used in the description of plants of the syngenesia class, or those

with compound flowers, when the partial flowers, or smaller floscules, happen to be of different kinds. See *Flower*.

DIFFUSE, an epithet applied to such writings as are wrote in a prolix manner. Sallust is reckoned sententious, and Livy diffuse; Demosthenes is close and concise, and Cicero is diffuse.

DIFFUSION, the dispersion of the subtile effluvia of bodies into a kind of atmosphere all round them. Thus the light diffused by the rays of the sun, issues all round from that amazing body of fire; and thus are the magnetic particles diffused every where round about our earth and parts adjacent to it.

DIGEST, *Digestum*, in matters of literature, a collection of the decisions of the Roman lawyers, properly digested, or arranged under distinct heads, by order of the emperor Justinian. It constitutes the first part or volume of the civil law.

DIGESTION, in physic, the dissolution or separation of the aliments into such minute parts as are fit to enter the lacteal vessels, and circulate with the mass of blood.

DIGESTION, in chemistry, the subjecting bodies, included in proper vessels, to the action of a gentle and continued heat.

The vessels generally used to contain the matter to be digested are matrasses or bolt-heads, and sometimes glass bodies; but where the heat is so gentle as to make no evaporation, the structure is indifferent. The degree of heat requisite in digestion, differs according to the nature of the subject: in tinctures made with strong spirit of wine or volatile salts, and in solutions where a great effervescence is apt to arise, a very gentle one should never be exceeded: in aqueous solutions, and most other cases, a greater may be allowed: but it must always be understood to be less than will make the matter boil; otherwise the operation comes not within the proper meaning of the word digestion, which is a distinction from coction.

DIGESTION, in surgery, the disposing of an ulcer or wound to suppurate, or to discharge good pus, by the application of proper medicines.

DIGESTIVE, in medicine, such remedies as strengthen and increase the tone of the stomach, and assist in the digestion of foods. See *Digestion*.

To this class belong all stomachics and strengtheners, or corroborants.

DIGESTIVE, in surgery, such medicines

cines as are applied to wounds, &c. to promote a good maturation and laudable suppuration of matter. Lenient, anodyne, and balsamic digestives, are to be applied to a gangrene. Digestives of turpentine, and the yolks of eggs, are useful in abscesses, wounds, and ulcers.

DIGESTOR, in chemistry, a strong vessel made of copper, or iron, fitted with a close cover and screws, so as to remain perfectly tight, in a considerable degree of heat; whilst water, common air, and the subject of the operation are contained within.

DIGIT, DIGITUS, in astronomy, the twelfth part of the diameter of the sun, or moon, is used to express the quantity of an eclipse. Thus an eclipse is said to be of six digits, when six of these parts are hid.

DIGIT is also a measure taken from the breadth of the finger. It is properly three quarters of an inch, and contains the measure of four barley corns laid breadthwise.

DIGITATED, among botanists, an appellation given to compound leaves, each of which is composed of a number of simple foliola, placed regularly on a common petiole; though, strictly speaking, there must be more than four foliola to make a digitated leaf.

DIGNITARY, in the canon law, one who holds a dignity, that is, a benefice which gives him some preeminence over mere priests and canons. Such is a bishop, dean, arch-deacon, prebendary, &c. See *Bishop, Dean*, &c.

DIGNITY, as applied to the titles of noblemen, signifies honour and authority.

DIKE, a ditch, or drain, for the passage of waters. See *Ditch*, &c.

Dike also signifies a work of stone, timber, earth, fascines, &c. raised to oppose the entrance of the waters of the sea, a river, lake, &c. The most stupendous works of this kind are the dikes of Holland.

DIKE-REEVE, an officer who takes care of the dikes and drains in Lincolnshire.

DILAPIDATION, in law, a wasteful destroying or letting parsonage-houses, &c. run to decay, for want of necessary reparation. If the clergy neglect to repair the houses belonging to their benefices, the bishop may sequester the profits for that purpose: and a prosecution may be brought either in the spiritual court, or at common law, against the incumbent

himself, or against his executor or administrator.

DILATATION, in anatomy, is when any passage or receptacle in the body, &c. is too much stretched or distended: and in general, it signifies a thing's taking up more space than it did before.

DILATATION, in surgery and anatomy, the widening the orifice of a wound; or the distension of any vessel, or the like.

DILATATOIRES, in anatomy, a name given to several muscles in the human body; as *Dilatatores alæ nasi*, *Dilatatores urethræ*.

DILEMMA, in logic, an argument consisting of two or more propositions, which divides the whole into all its parts, or members, by a disjunctive proposition.

Instances of this are frequent, as, "In this life we must either obey our vicious inclinations, or resist them: to obey them will bring sin and sorrow; to resist them is laborious and painful: therefore we cannot be perfectly free from sorrow and pain in this life."

A dilemma becomes faulty, or ineffectual, three ways. First, when the members of the division are not well opposed, or not fully enumerated; for then the major is false. Secondly, when what is asserted concerning each part is not just, then the minor is not true. Thirdly, when it may be retorted with equal force upon him who utters it.

DILIGENZA, in music, is used for a soft or sweet manner of singing or playing.

DILL, *Anethum*, in botany. See *Anethum*.

DIMENSION, in geometry, is either length, breadth, or thickness; hence a line hath one dimension, viz. length; a superficies two, viz. length and breadth; and a body, or solid, has three, to wit, length, breadth, and thickness.

Dimension is also used with regard to the power of the roots of an equation, which are called the dimensions of that root: as in cubic equation, the highest power has three dimensions, &c.

DIMINISHED INTERVAL, in music, a defective interval, or an interval, that is short of its just quantity, by a lesser semitone, &c. See *Interval*.

DIMINUTION, in architecture, a contraction of the upper-part of a column, by which its diameter is made less than that of the lower-part.

It generally commences from one third of the height of the column, but archi-

sects differ in their opinions concerning it.

DIMINUTION, in heraldry, a term used for what the French call brisures, and we denominate differences.

DIMINUTIVE, in grammar, a word formed from some other, to soften the force of it, or to signify a thing is little in its kind. Thus cellule is a diminutive of cell, globule of globe, hillock of hill, streamlet of stream, baronet of baron.

DIOCESE, a particular district, or division, under the direction and government of a bishop.

England in regard to its ecclesiastical state is divided into two provinces, viz. Canterbury and York, and each province into subordinate dioceses, of which there are twenty-two in England, and four in Wales.

DIONYSIA, in Grecian antiquity, solemnities in honour of Bacchus, sometimes called by the general name of orgia; and by the Romans, bacchanalia, and liberalia.

DIOECIA, in the Linnæan system the twenty-second class of plants, comprehending all those which have the male and female parts of fructification, or the stamina and pistil, or distinct plants of the same kind; in which respect they bear some analogy to quadrupeds, whose males and females are likewise distinct.

To this class belong the willow, hemp, poplar, juniper, pistachia, yew, &c. in all which, the female plants alone produce seeds; but even these prove barren, unless planted near the male plants, so as to be within the reach of the farina fecundans. See *Farina*.

* **DIOGENES** the Cynic, the son of Iesius, a banker of Sinope, in Pontus, being banished with his father for coining false money, retired to Athens, where he studied philosophy under Antisthenes. He added new degrees of austerity to the sect of the Cynics. He lodged in a tub, and had no other moveables besides his staff, wallet, and wooden bowl, which last he threw away on seeing a boy drink out of the hollow of his hand. Diogenes however, had a sufficient share of pride; for he treated mankind with a sovereign contempt, and thought himself superior to all other philosophers. Alexander the Great being at Corinth, went to see him, and pressed him to let him know what he would have, promising to grant him what-

ever he would ask; but Diogenes rejecting the offers of that prince, only desired him to stand away, and not intercept the sun from him: when that monarch, admiring his greatness of soul, cried, That if he was not Alexander, he would chuse to be Diogenes. He was one of those extraordinary persons who verify the maxim, that there is no great wit, who does not discover in his actions a degree of folly; which made Plato say, that Diogenes was Socrates run mad. He passed a great part of his life at Corinth, in the house of Xenocrates, who had bought him of some pirates, and made him preceptor to his children. He was superintendant of the family of that rich Corinthian, and his friends being willing to purchase him: "You are fools," said he, "the lions are not the slaves of those who feed them; but they are the servants of the lions." He therefore plainly told Xenocrates, that he ought to obey him, as people obey their governors and physicians. The most shameless and inexcusable circumstance in his life, was his plunging himself into acts of impurity in the open view of the world. He died about the three hundred and twentieth year before the Christian æra; and it is the common opinion, that he stifled himself by holding his breath.

DIOPTRICS, the science of refractive vision, or that part of optics which considers the different refractions of light in its passing through different mediums, as air, water, glass, &c. and especially lenses.

DIPHTHONG, in grammar, a double vowel, or the mixture of two vowels pronounced together, so as to make one syllable. See *Vowel*.

DIPLOE, in anatomy, the soft medullium, or medullary substance, which lies betwixt the two laminæ of the bones of the cranium. See *Cranium*.

DIPLOMA, an instrument given by colleges, societies, &c. to a clergyman to exercise the ministerial function, or to a physician to practise the profession, &c. after passing examination, or admitting him to a degree.

DIPPING, among miners, signifies the interruption, or breaking off, of the veins of the ore.

DIPPING NEEDLE, a long straight piece of steel equally poised upon an axis parallel to the horizon, and afterwards touched with a load-stone, to discover the exact tendency of the magnetic virtue. A needle placed in this manner will dip below the horizon, or the touched part of it
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be directed to a point below the earth's surface; whence the name. The learned Mr. Whiston endeavoured to find the longitude at sea by means of the dipping-needle, but without success.

DIPSACUS, teasel, in botany, a genus of plants. The leaves of wild teasel are recommended against flatulencies, and crudities of the stomach. See *Teasel*.

DIPSAS, in zoology, a species of serpent, so called from its bite creating a thirst that proved mortal.

DIPTOTES, in grammar, such nouns as have only two cases, as *suppetia*, *suppetias*, &c.

* **DIRCE**, in fabulous history, the wife of Lycus, king of Thebes, whom he married after he had divorced Antiope: she perceiving that Antiope was with child, and suspecting that her husband still kept her company, put her in prison; whence Jupiter released her, and she was delivered of Amphion and Zethus, who afterwards slew Lycus, and tying Dirce to the tail of a wild bull, she was dragged about till the gods pitying her, turned her into a fountain, which was called by her name.

DIRECT, in arithmetic. The rule of three direct, is opposite to the rule of three inverse. See *Rule of Three* and *Proportion*.

DIRECT, in astronomy. A planet is said to be direct, when it appears to an observer on the earth to go forward in the zodiac, or according to the succession of the signs. See *Planet*.

DIRECTRAY, in optics, a ray flowing from a point of a visible object directly to the eye, through one and the same medium.

DIRECTION, in mechanics, the line or path of a body's motion, along which it endeavours to proceed, according to the force impressed upon it.

Angle of Direction, that formed by the lines of direction of two conspiring powers.

Magnetical **DIRECTION**, the tendency of the load-stone, and other magnetic bodies, to certain points called their poles: thus, a magnetical needle always presents one of its ends towards the north-pole of the world, and the other towards the south-pole.

DIRECTOR, in commercial polity, one who has the management of the affairs of a trading company: thus we say the directors of the India company, South-sea company, the bank, &c.

DIRECTOR, in surgery, a grooved probe, to direct the edge of the knife or

scissors in opening sinuses, or fistulæ, that by this means the sub adjacent vessels, nerves, and tendons, may remain unhurt.

DISBUDDING of Trees, the taking away such branches or sprigs, newly put forth, as are ill-placed.

DISBURDENING of Trees, the taking off part of the leaves and fruit, when too numerous, that those left may grow the larger.

DISC, in astronomy, the body and face of the sun and moon, such as it appears to us on the earth; or of the earth, such as it appears to a spectator in the moon, &c. The disc in eclipses is supposed to be divided into twelve equal parts, called digits: in a total eclipse of the luminaries, the whole disc is obscured; in a partial eclipse, only a part thereof.

DISC, in botany, an aggregate of florets forming, as it were, a plane surface.

DISC, in optics, the width of the aperture of telescope glasses, whatever their form be, whether plane, convex, concave, &c.

DISCERNING, or **DISCERNMENT**, among logicians, a faculty of the mind, whereby it distinguishes between ideas. See *Judgment* and *Intuition*.

DISCIPLE, a person who learns any thing from another: thus, the followers of any teacher, philosopher, &c. are called disciples. In the Christian sense they were followers of Christ, in general; but in a more restrained sense, the disciples denote those alone who were the immediate followers and attendants on his person, of which there were seventy, or seventy-two.

DISCIPLINE, in a general sense, instruction and government, as military, discipline, ecclesiastical discipline, &c. Ecclesiastical discipline consists in putting those laws in execution by which the church is governed.

DISCLAIMER, in law, a plea wherein is contained an express denial of a thing.

DISCORD, in music, the relation of two sounds which are always and of themselves disagreeable, whether applied in succession or consonance. Thus the second, fourth, and seventh, with their octaves, and, in general, all intervals, except those few which precisely terminate the concords, are called discords. Discords are distinguished into concinnous and inconcinnous intervals. See *Interval*. The harmony of discords is that wherein the discords are made use of as the solid and substan-

D I S

substantial part of the harmony : for by a proper interposition of a discord, the succeeding concords receive an additional grace. Thus the discords are in music, what strong shades are in painting. See *Harmony*. The discords are the fifth when joined with the sixth, the fourth with the fifth. The ninth of its own nature is a discord ; so is the seventh. The discords are introduced into harmony with due preparations, and must be succeeded by concords, which is the resolution of discords.

DISCOVERY, in dramatic poetry, a manner of unravelling a plot, or fable, in tragedies, comedies, and romances. See *Catastrophe*.

DISCOUNT, in commerce, a term among traders, merchants, and bankers. It is used by the two former on occasion of their buying commodities on the usual time of credit, with a condition that the seller shall allow the buyer a certain discount at the rate of so much per cent. per annum, for the time for which the credit is generally given, upon condition that the buyer pays ready money for such commodities; instead of taking the time of credit. Traders and merchants also frequently taking promissory notes for monies due, payable to them or order at a certain time ; and sometimes having occasion for money before the time is elapsed, procure these notes to be discounted by bankers or others, before the time of payment. Bills of exchange are also discounted by bankers.

DISCRETE, or **DISJUNCT PROPORTION**, is when the ratio of two or more pairs of numbers or quantities is the same, but there is not the same proportion between all the four numbers. Thus, if the numbers $3 : 6 :: 8 : 16$ be considered, the ratio between $3 : 6$ is the same as that between $8 : 16$, and therefore the numbers are proportional; but it is only discretely or disjunctly, for 3 is not to 6 as 6 to 8 ; that is, the proportion is broken off between 8 and three, and is not continued as in the following continual proportionals, $3 : 6 :: 12 : 24$. See *Proportion*.

DISCRETE QUANTITY, such as is not continuous and joined together. Such is a number whose parts being distinct units, cannot be united into one continuum ; for in a continuum, there are no actual determinate parts before division, but they are potentially infinite.

DISCUSSION, in a matter of literature, the treating or handling of any particular point, or problem, so as to shake off the difficulties with which it is embarrassed.

VOL. II,

D I S

Discussion, in a medicinal sense, the same with diaphoresis. See *Diaphoresis*.

DISCUTIENTS, in medicine, such remedies as, by their subtilty, dissolve a stagnating or coagulated fluid, and dissipate the same without any external solution of continuity.

DISDIAPASON, or **BISDIAPASON**, in music, a compound concord, described by F. Parran, in the quadruple ratio of $4 : 1$, or $8 : 2$.

DISEASE, in medicine, that state of a living body wherein it is deprived of the exercise of any of its functions, whether vital, natural, or animal. As the actions or conditions of the body, so also the diseases or defects thereof may be reduced to three general heads, viz. those of the solids and fluids, and those compounded of both.

The solids, that is, the bones and flesh, may be disordered five ways, viz. rendered turgid by tumours, cut by wounds, corroded by ulcers, &c. removed out of their places, or discontinued by fractions and contusions.

Diseases of the fluids are in the blood or spirits ; those of the blood are two, such as thicken and retard its motion, or such as attenuate and accelerate it. To the last kind the fever and feverish affections only belong. All other diseases of the blood belong to the former.

The diseases of the animal spirits arise either from an intermission or retardation of their motion, or a deminution of their quantity, or disorder in their quality. Lastly, diseases of the fluids, whether those of the blood or spirits, are seldom long confined thereto, but presently come to disturb and impede some of the functions of the solid parts, and at last corrupt the substance of the solids themselves : hence arise compound or complicated diseases, which are infinitely various. All diseases are owing to the bad regulations of our lives, either from too much or too little sleep, too much or too little exercise, &c. Sometimes they are caused by things without, and very often by an abuse of food, that is, by our intemperance in eating and drinking, which is so much the more injurious to us, because it affects us inwardly.

Diseases themselves we find are often useful ; for the blood in a fever, if well governed, like wine upon a fret, dischargeth itself of all heterogeneous mixture ; and nature, the disease, and remedies clean all the rooms in the house,

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whereby that which threatens death, tends to the prolonging of life; and as diseases minister sometimes to health, so to other good uses in the body, such as quickening the senses, of which we may find instances.

Endemic DISEASES. See *Endemic*.

Epidemic DISEASES. See *Epidemic Diseases*.

DISFRANCHISING, among civilians, signifies the depriving a person of the rights and privileges of a free citizen or subject.

DISGUISE, a counterfeit habit. Persons doing unlawful acts in disguise, are by our statutes sometime subjected to great penalties, and even declared felons.

DISJUNCTIVE, something that separates or disjoins. Thus, *or*, *neither*, *nor*, &c. which in connecting a discourse yet separate the parts of it, are called disjunctive conjunctions.

DISK. See *Disc*.

DISLOCATION, in surgery, the same with luxation. See *Luxation*.

DISMEMBERED, in heraldry, is applied to birds that have neither feet nor legs, and also to lions and other animals whose members are separated.

DISMOUNTING, in the military art, the act of unhorsing. Thus, to dismount the cavalry, dragoons, &c. is to make them alight.

DISMOUNTING CANNON, is the breaking their carriages, wheels, axletrees, or any thing else, so as to render them unfit for service.

DISPART, in gunnery, the setting a mark upon the muzzle ring of a piece of ordnance, so that a sight-line taken upon the top of the base-ring against the touch-hole, by the mark set on or near the muzzle, may be parallel to the axis of the concave cylinder.

DISPENSARY, or **DISPENSATORY**, a book containing the method of preparing the various kinds of medicines used in pharmacy. Such are those of Bauderon, Quercetan, Zwelfer, Charas, Bates, Mesue, Salmon, Lemery, Quincy, Brookes, &c. but the most esteemed are the Edinburgh and London Dispensatories.

Dispensary, or **Dispensatory**, a magazine or office for selling medicines at prime cost to the poor.

DISPENSATION, in law, the granting a licence of doing some certain action not otherwise permitted.

DISPERSION, the scattering or dissipating something.

Dispersion, in optics, the same with the divergency of the rays of light.

Point of DISPERSION, in dioptrics, the point from which refracted rays begin to diverge, where their refraction renders them divergent. See *Refraction*.

DISPERSION of Inflammations, in medicine and surgery, the removing the inflammation, and restoring the inflamed part to its natural state.

DISPOSITION, in architecture, the just placing the several parts of an edifice, according to their proper nature and office.

DISPOSITION, in rhetoric, the placing words in such an order as contributes most to the beauty and energy of a discourse.

DISPROPORTION, a general term for any kind of irregularity, or want of proportion in the parts of a thing.

DISSECTION, in anatomy, the cutting up a body, with a view of examining the structure and use of the parts. See *Anatomy*.

DISSEISIN, in law, an unlawful dispossessing a person of his lands or tenements.

DISSENTERS, separatists from the service and worship of the church of England. See *Presbyterians*, *Anabaptists*, &c.

DISSIMILAR, an appellation given to things which are unlike.

DISSIMILAR PARTS, in anatomy, those compounded of parts of various structure, such are all the limbs of the body.

DISSIMILITUDE, whatever constitutes the difference between two dissimilar things.

DISSIPATION, in physics, an insensible loss or consumption of the minute parts of the body; or that flux whereby they fly off, and are lost. See *Effluvia*.

Circle of DISSIPATION, in optics, that circular space upon the retina, which is taken up by one of the extreme pencils or rays issuing from an object.

The consideration of the circles of dissipation, formed by the rays coming from the extremities of the objects, is of use to account for several curious phenomena of vision. See *Smith's Optics*.

DISSOLUTION, in music, is when a found in the enharmonic genus is lowered three dieses; for thereby that genus is dissolved, and the music, or that interval at least, is chromatic.

DISSONANCE, in music. See *Discord*.

DISSYLLABLE, among grammarians, a word consisting only of two syllables, &c.

DISTAFF, an instrument about which flax is affixed in order to be spun.

DISTANCE, the interval between two things; either with regard to time, or place.

DISTANCES, in geometry, are measured by the chain, decempeda, and the like. See *Chain*.

DISTANCE, in geography, the arch of a great circle intersected between two places.

DISTANCE, in navigation, the number of miles, or leagues, that a ship has sailed from any point. See *Sailing*.

DISTANCE, in astronomy. The distance of the sun, planets, and comets, is found from their parallax.

That of the fixed stars, as having no sensible parallax, we can do little more than guess at.

DISTANCE of the Sun from the Moon's Node, or Apogee, is an arch of the ecliptic intercepted between the sun's true place and the moon's node, or apogee. See *Node*.

DISTANCE of the Eye, in perspective, is a line drawn from the eye to the principal point.

Curtate DISTANCE, in astronomy, the distance of the planet's place, reduced to the ecliptic, from the sun.

Point of DISTANCE, in perspective, a point in the horizontal line at such distance from the principal point, as is that of the eye from the same.

DISTANCE of the Bastions, in fortification, the side of the exterior polygon. See *Polygon*.

DISTASTE, an aversion or dislike to certain foods, and may be either constitutional, or owing to some disorder of the stomach; in which last case emetics are recommended.

DISTEMPER, among physicians, the same with disease. See *Disease*.

DISTEMPER, in painting, a term used for the working up of colours with something besides water or oil. If the colours are prepared with water, that kind of painting is called limning; and if with oil, it is called painting in oil, and simply painting. If the colours are mixed with size, whites of eggs, or any such proper glutinous, or unctuous matter, and not with oil, then they say it is done in distemper. In this manner the admirable cartoons, late at Hampton-court, but now

at the queen's palace; are painted. The greatest disadvantage of distemper is, that it has no glittering, and all its colours look dead; by which means they appear alike in all sorts of lights, which oil colours, or even colours in distemper, when varnished, do not.

DISTICH, a couplet of verses making a complete sense.

DISTICHIASIS, in surgery, a disease of the eye-lids, when under the ordinary eye-lashes there grows another extraordinary row of hair, which frequently eradicates the former; and pricking the membrane of the eye, excites pain, and brings on a defluxion. It is cured by pulling out the second row of hairs with nippers, and cauterizing the pores out of which they issued.

DISTILLATION, the condensing and collecting in a fluid form; by a proper apparatus, the steam or vapour of bodies previously rarified, by the application of heat.

The end of distillation is of two kinds: the first, and by far the most general, is for the separation or extraction of some required bodies from others, with which they were mixed, as in the case of vinous and volatile spirits, and essential oils. The other is for the quicker and more effectual combination of such bodies whose mixture is assisted by a boiling heat; as in the case of Spir. nitr. dulc.

Distillation is performed by several kinds of apparatus, for all which the general name is an alembic; to form each kind whereof, two or more vessels are conjoined.

The vessels required are of three kinds: a proper body or reservoir to contain the matter while the heat acts on it; a refrigerant to condense the vapour as it rises; and a receiver to contain it, when condensed. These three intentions are, in most kinds of alembics, executed by three distinct vessels: but in the instance of the retort and receiver, the whole is effected by two; the neck of the retort, and the increased magnitude of the receiver, performing the office of a condenser.

The alembics most generally in use are the worm-still and retorts: the first is of modern invention, and may be esteemed as one of the most considerable improvements of the chemical art; since it has furnished a method of executing, in several cases, one of the most useful operations with the greatest convenience and expedition, and with an extent, in regard to quantity, that has no limitation; whereas the kind

of stills used before for the same purposes, from the defect of a greater surface, were liable to have the condensers heat beyond the condensing point; and hence to be blown off, with great loss of the matter, and danger to the operator: but their use is so superseded by the worm-still, that it will answer no end to be particular in regard to them.

The other general method is by the use of retorts and receivers, which will very commodiously perform all kinds of distillations, where the limitation of quantity and time are not of importance; but in such cases they must give place to the worm-still, in regard to those substances that admit of its use; the defects of the other being entirely remedied in this. In all these instances, however, where the corrosive power of the matter permits the use of glass only, retorts are preferable to every other kind of alembic hitherto invented.

The substances proper to be distilled by the worm still are vinous spirits, simple waters, oil of turpentine, and other ethereal essential oils, when made with water.

The substances proper to be distilled in the retorts are acid spirits, when made by Glauber's methods; spiritus nitri dulcis, volatile spirits, and several others of particular kinds, as wax, amber, and antimony, when distilled with mercury sublimate for the butter; mercury per se is ordered also, by the college of London, to be distilled in retorts: but, without a particular management, it is impracticable, and in all cases troublesome, and less eligible than the method used by the refiners; for which see *Purification of Mercury*.

Animal substances, when in quantities, require to be distilled in an iron-pot; and aqua-fortis, when made from crude vitriol, either in the same or long necks; only the aqua-fortis being the less volatile, and requiring the more heat, the vessel used for the distillation of it must be set deeper in the fire than those used for any animal substances.

Distillation in balneo marizæ, being necessarily confined to those substances which will rise with a less degree of heat than will make water boil, is therefore only proper for ethereal or essential oils, volatile spirits, and vinous spirits. The New London Dispensatory orders this method to be used for the spirits of lavender

and rosemary; and the Edinburgh Dispensatory directs it for the spirit of scurvy-grass, the compound spirit of lavender, and the saline aromatic spirit. But a gentle sand-heat, if the fire be timely suppressed, when the proper quantity of the matter is come over, is as effectual, and more commodious.

The first subject of caution, in regard to distillation, is to take care to leave sufficient room, in the containing vessel, or body, for the expansion and ebullition of the matter to be distilled; otherwise it is very apt to overflow in the neck, and break the vessels, if of glass; hazard the firing of the building, in the case of vinous spirits; and frustrate the operation in all. This is to be particularly guarded against in the distillation of aqua-fortis and spirit of salt by Glauber's method, and of amber; as also in the rectification of the spirit of hartshorn; all of which, especially in the beginning of the operation, are extremely subject to make a very great ebullition, and to froth up in the neck of the retort. In these cases, therefore, at least one third of the retort should be left unfilled; and even then, without a very careful management of the fire, they are not exempt from danger. Another requisite caution is, that the condensing surface be sufficiently large, and the heat accommodated to it; for if an error of this kind occur in the case of the worm-still, the head will be blown off, and the vapour dissipated, with considerable loss; and if in that of vinous spirits, to the great danger of those who may happen to be in the place.

It is necessary, likewise, in distillation, as well as digestion, to avoid luting the vessels too closely with any tenacious substance; for if a sufficient vent be not left for the escape of the air, which is generated during the distillation of some kinds of substances, as also for the expansion, which attends the increase of heat of that air which is included in the vessels at the time of their junction, the vessels will be in extreme danger of being burst with great violence.

DISTILLERY See *Distillation*.

To this art likewise belong the peculiar processes of brewing and fermentation, the knowledge of proper additions, and the rectification of spirits. See *Brewing*, *Fermentation*, *Additions*, and *Rectifications*.

DISTINCT BASE, in optics. See *Focus*.

D I V

DISTRAINING, in law, the same with attaching. See *Attaching*.

DISTRESS, in law, the seizing or distraining any thing for rent in arrear, or other duty unperformed.

DISTRIBUTION, in architecture, the dispensing the several parts and pieces which compose a building, as the plan directs.

DISTRIBUTION, in rhetoric, a kind of description whereby an orderly division is made of the principal qualities of the subject.

DISTRIBUTION, in printing, the taking a form asunder, separating the letters, and disposing or distributing them in the cases again, each in its proper cell. See *Printing*.

DISTRIBUTIVE JUSTICE, that whereby we give every person what properly belongs to him.

DISTRICT, in geography, a part of a province, distinguished by peculiar magistrates, or certain privileges.

DITCH, a narrow channel or trench made for draining in marshy grounds, the conveyance of water, or inclosing fields.

DITCH, in fortification, the same with moat. See the article *Moat*.

DITHYRAMBUS, in ancient poetry, a hymn in honour of Bacchus, full of transport and poetical rage.

DITONE, in music, an interval comprehending two tones. The proportion of the sounds that form the ditone is 4 : 5, and that of the semi-ditone is 5 : 6.

DITTANY, *Diſtamnus*, in botany, &c. See *Diſtamnus*.

DITTO, usually written *Do.* in books of accounts, an Italian word, signifying the aforementioned.

DIVAN, a council-chamber, or court of justice, among the eastern nations, particularly the Turks.

DIVERGENT, or **DIVERGING LINES**, in geometry, those which constantly recede from each other.

DIVERGENT RAYS, in optics, those which, going from a point of the visible object, are dispersed, and continually depart one from another, in proportion as they are removed from the object: in which sense it is opposed to convergent. See *Convergent*.

Concave glasses render the rays divergent, and convex ones convergent.

Concave mirrors make the rays converge, and convex make them diverge. See *Concave* and *Convex*.

DIVERGENT, or **DIVERGING HY-**

D I V

PERBOLA, one whose legs turn their convexities towards one another, and run outwards quite contrary ways. See *Hyperbola*.

DIVERGING SERIES. See *Series*.

DIVERSIFYING, among orators, is the handling a subject different ways, to throw new light on it, and enforce it the stronger.

DIVERSION, in military affairs, is when an enemy is attacked in one place where they are weak and unprovided, in order to draw off their forces from making an irruption somewhere else.

DIVIDEND, in arithmetic, the number proposed to be divided into a certain number of equal parts.

DIVINATION is the knowledge of things obscure or future, which cannot be attained by any natural means.

DIVING, the act of descending under water to considerable depths, and abiding there a competent time; the uses of which are particularly in fishing for pearls, corals, sponges, wrecks of ships, &c.

There have been various engines contrived to render the business of diving safe and easy; the great point is to furnish the diver with fresh air, without which he must make but a very short stay, or perish. Those who dive for sponges in the Mediterranean, carry down sponges dipped in oil in their mouths. But considering the small quantity of air that can be contained in the pores of a sponge, and how much that little will be contracted by the pressure of the incumbent air, such a supply cannot subsist a diver long, since a gallon of air is not fit for respiration above a minute. Dr. Halley assures us, a naked diver cannot subsist above two minutes under water, with or without a sponge: besides, if the depth be considerable, the pressure of the water makes the eyes blood-shot, and frequently occasions a spitting of blood.

DIVING-BLADDER, a term used by Borelli for a machine which he contrived for diving under water to great depths, with great facility. The vesica or bladder, as is usually called, is to be of brass or copper, and about two feet in diameter. This is to contain the diver's head, and is to be fixed to a goat's skin habit, exactly fitted to the shape of the body of the person. Within this vesica there are pipes, by means of which a circulation of air is contrived; and the person carries an air pump by his side, by means of which he may make himself heavier or lighter, as the fishes do, by contracting or dilating

manifest, that 53 is precisely the number that arises from the division of 371 by 7.

After the same manner, is division performed in decimal fractions; only observe, that there must be so many figures cut off in the quotient for decimals, as there are more in the last dividend, than in the divisor.

In algebraic terms division is performed by the resolution of what is compounded by multiplication.

A quantity compounded of several terms is divided by dividing each of its terms by the divisor.

DIVISION, among logicians, the explication of a complex idea, by enumerating the simple ideas of which it is composed; in which sense it is nearly allied to definition, only that this last regards names and things, whereas division is employed wholly about ideas.

DIVISION, in music, the dividing the interval of an octave into a number of less intervals. See *Octave*.

DIVISION, in a naval armament, a certain number of ships in a fleet or squadron, distinguished by a particular flag or pendant, and commanded by a particular officer. When a fleet consists of sixty sail of the line, (i. e. ships of or above 60 guns) the admiral divides it into three squadrons, each of which has its divisions, and three general officers, viz. admiral, vice-admiral, and rear-admiral. Each squadron has its proper colours, and each division its proper mast: for example, the white flag is proper for the first squadron of France; the white and blue for the second, and the blue for the third. In England, the first admiral of the fleet carries the union flag at the main-top-mast-head; next the admiral of the white; and then the admiral of the blue. The particular ships carry pendants of the same colour of their squadrons, at the masts of their respective divisions; so that the last ship in the division of the blue squadron, wears a blue pendant at the mizen-top-mast-head. The general officers, or commanders of divisions, place themselves in the center of their divisions. We must except the three commanding admirals, who in a sailing position, lead their respective squadrons.

DIVISOR, in arithmetic, the number that divides another, called the dividend; or which shews into how many parts the dividend is to be divided. See *Division*.

DIVORCE, a breach or dissolution of the bond of marriage. See *Marriage*.

DIURESIS, in medicine, an excretion of urine: whence,

DIURETICS, in pharmacy, such simples as increase the discharge of urine; or which are supposed to have a power of removing obstructions in the urinary passages.

DIURNAL, in astronomy, relating to the day, in opposition to nocturnal, which regards the night.

DIURNAL ARCH, the arch or number of degrees that the sun, moon, or stars, describe between their rising and setting.

DIURNAL Motion of a Planet, is so many degrees and minutes as any planet moves in twenty-four hours. Hence the motion of the earth about its axis, is called its diurnal motion. See *Earth*.

DIZZINESS, in medicine, a disease in the head. See *Vertigo*.

DOCK, *Lapathum*, in botany. See *Lapathum*.

DOCK, or **DOCKING**, in law, an expedient for cutting off an estate tail in lands or tenements, that the owner may be enabled to sell, give, or bequeath the same.

DOCK, in maritime affairs, a sort of broad deep trench built by the side of a harbour, on the banks of a river, commodiously fitted either for building ships, or receiving them to be repaired or cleaned.

DOCKING a ship, receiving her into the dock, cleaning the bottom with burning faggots, and daubing it over with a mass of tallow, sulphur, and other ingredients, to make it smooth, that it may the more swiftly glide through the water.

DOCK-YARDS, magazines containing all sorts of naval stores; the principal ones in England, are those of Chatham, Portsmouth, Plymouth, Woolwich, Deptford, and Sheerness. These yards are generally supplied from the northern crowns, with hemp, pitch, tar, rosin, and several other species, but as for masts, particularly those of the largest size, they are generally brought from New-England.

DOCTOR, one who has passed all the degrees of a faculty, and is empowered to teach or practise the same: thus we say, doctor in divinity, doctor in physic, doctor of laws.

DOCTOR, the degree of, was first given in England, in 1207.

DOCUMENT, in law, some written monument produced in proof of any thing asserted.

DODDER, a plant called *cuscuta*. See *Cuscuta*.

DODECAGON, in geometry, a regular polygon, consisting of twelve equal sides and angles.

D O G

DODECAGON, in fortification, a place surrounded by twelve bastions.

DODECAHEDRON is one of the platonic bodies, or five regular solids, and is contained under twelve equal and regular pentagons.

DODECANDRIA, in the Linnæan system, a class of plants, the eleventh in order, comprehending all those with hermaphrodite flowers, and only twelve stamina in each: such are agrimony, asarum, rhizophora, &c.

DODONIAN, *Dodonæus*, in antiquity, an epithet given to Jupiter, because he was worshipped in a temple built in the forest of Dodona, where was the most famous, and it is said, the most antient oracle of all Greece.

DOG, *Canis*, in zoology, a genus of quadrupeds. See *Canis*.

Bite of a mad DOG. See *Hydrophobia*.

DOG, *Canis*, in astronomy. See *Canis*.

DOG's BANE, in botany, a genus of plants.

DOG-BERRY-TREE, a name sometimes used for the cornel-tree. See *Cornus*.

DOG-DAYS, the same with a canicular. See *Canicular*.

DOG's FENNEL, in botany, a name by which the cotula is sometimes called. See *Cotula*.

DOG-FLY, a kind of fly, so called from its being particularly troublesome to Dogs: it is not unlike that species which infests cattle.

DOG's ROSE, a name sometimes given to the common briar, or hip-bush. See *Rose*.

DOG's STONES, a species of orchis, whence the salop is made, said to be a great provocative to venery.

DOG's TAIL, in botany, the same with the cynosurus. See *Cynosurus*.

DOG's TONGUE, a plant called by botanists cynoglossum. See *Cynoglossum*.

DOG's TOOTH, *Dens Canis*. See *Erythronium*.

DOG's TOOTH SHELL. See *Dentalium*.

DOGE, the chief magistrate in the republic of Venice and Genoa. This dignity is elective in both places: at Venice it continues for life, at Genoa it is only for two years. His title is serenity; he is chief of the council, and the mouth of the republic.

DOGGER, a Dutch fishing vessel of the northern or German ocean: they are most commonly used in the herring-fish-

D O M

ry, and are navigated with two masts, viz. a main-mast, and a small mizen-mast.

DOGMA, a principle, maxim, tenet, or settled opinion, particularly with regard to matters of faith and philosophy.

DOGMATICAL, something belonging to a doctrine or opinion. A dogmatical philosopher is one who asserts things positively.

DOGMATISTS, *Dogmatici*, a sect of ancient physicians, of which Hippocrates was the first author.

DOLE, signifies a distribution or dealing of alms, or a liberal gift made by a great man to the people.

DOLE, in the law of Scotland, is used for malevolent intention.

DOLLAR, a silver coin current in Spain, several parts of Germany and Holland. There are various species of dollars, as the rix-dollar, the semi-dollar, the quarter-dollar, &c. See *Exchange*.

DOLPHIN, in ichthyology, the delphinus, with an oblong rounded body, and a long acute rostrum. It is considerably longer than the porpus: the opening of the mouth is vastly wide, reaching on each side to the breast; and the fistula or aperture for discharging the water, is in the middle of its head.

DOLPHIN, *Delphinus*, in astronomy. See *Delphinus*.

DOVE, in architecture, a spherical roof, raised over the middle of a building, as a church, hall, &c. by way of crowning. Domes have commonly columns ranged around their outides, both for the sake of ornament and support to the work.

DOMESDAY, **DOOMS-DAY-BOOK**, a very ancient record made in the time of William the Conqueror, which now remains in the exchequer, and consists of two volumes, a greater and a less; the great contains a survey of all the lands in most of the counties in England, and the less comprehends some counties that were not then surveyed.

DOMESTIC, any one who acts under another, serving to compose his family, in which he lives, or is supposed to live, as a chaplain, secretary, &c. Sometimes domestic is applied to the wife and children, but very seldom to servants.

DOMINI, or **ANNO DOMINI**. See *Anno*.

DOMINICAL LETTER, in chronology, properly called Sunday-Letter, one of the seven letters of the alphabet A B C D E F G, used in almanacs, ephemerides, &c.

&c. to denote the Sundays throughout the year. The dominical letters were introduced into the calendar by the primitive Christians, in lieu of the nundinal letters in the Roman calendar.

The first of these letters, which is A, is placed against the 1st of January; the second, B, against the 2d of January, and so on to the seventh, G, which is placed against the 7th of January; after which the letter A is placed against the 8th, &c. to the end of the year. Hence it follows, that whatever letter happens to be placed against any day of any week, the same letter will point out that day throughout the year. Thus, if the first of January, against which the letter A is placed, happen to be a Monday, then will G be the Sunday-letter; and all the days in the calendar which have G put to them will be Sundays; and for the same reason the letter A will point out all the Mondays throughout the year. Now as a common year consists of 365 days, or 52 weeks and one day over, it follows, that as the 1st, 8th, 15th, 22d, &c. day of the year have the same letter placed against it, the year will end on the same day of the week it commenced upon: and therefore, if the Sunday-letter in any assigned year (Leap-year excepted) be G, for the next it will be F, for the next following E, &c. in a retrograde order, until the 8th year, (supposing no leap-year to intervene) in which the dominical letter will be G again, and will thus proceed in a retrogressive manner, the Sunday-letter returning in the 15th, 22d, 29th, &c. years. Hence it is very evident, that whatever letter was the dominical for the year 1, the same would have returned in the years 8, 15, 22, 29, &c. until this time (setting aside the interpolation of Leap-years, and the reformation of the calendar.)

DOMINICANS, an order of religious, called in France Jacobins, and in England Black Fryars, or Preaching Fryars. This order, founded by St. Dominic, a native of Spain, was approved of by Innocent III. in 1215, and confirmed by a bull of Honorius III. in 1216. The design of their institution was to preach the Gospel, convert heretics, defend the faith, and propagate Christianity. By their rule they are enjoined perpetual silence, abstinence from flesh at all times, wearing of woollen, rigorous poverty, and several other austerities. This order has spread into all parts of the world. It has produced a great number of martyrs, confessors, and bishops;

and they reckon three popes, sixty-cardinals, one hundred and fifty archbishops, and eight hundred bishops of their order, besides the masters of the sacred palace, who have always been Dominicans. They are inquisitors in many places. The nuns or sisters of this order owe their foundation to St. Dominic himself, who built a monastery at Prouilles, where poor maids might be brought up, and supplied with all necessaries for their subsistence. The habit of these religious was a white robe, a tawny mantle, and a black veil. Their founder obliged them to work at certain hours of the day, and particularly to spin yarn and flax to make their own linen. The nuns of this order have one hundred and thirty houses in Italy, forty-five in France, fifty in Spain, fifteen in Portugal, forty in Germany, and many in Poland, Russia, and other countries. They lie on straw beds, and never eat flesh except in sickness; but many monasteries have mitigated this austerity.

DOMINION, *Dominium*, in the civil law, the power to use or dispose of a thing as we please.

DOMINUS, in the civil law, he who possesses any thing by right of purchase, gift, loan, legacy, inheritance, payment, contract, or sentence.

DOMINUS, in the feudal law, he who grants a part of his estate in fee to another.

DONATION, an act whereby a person transfers to another the property or use of something, as a free gift. In order to be valid, it supposes a capacity both in the donor and donee; and requires consent, acceptance, and delivery. Civilians distinguish donation into pure and conditional. *Donatio pura* is when one gives a thing with an intention that it become immediately the property of the donee, never to revert to the donor; and this from no other motive than his generosity. *Donatio conditionalis* is when one gives a thing with an intention that it become the property of the donee, upon performing some condition stipulated.

DONATIVE, a gratuity, or present, made to any person.

DOOR, in architecture, an aperture in a wall to give entrance and exit into and out of a building, or apartment.

DORADO, in ichthyology. See *Guaracapema*.

* **DORCHESTER**, the county town of Dorsetshire, is a large corporation-town, governed by a mayor, a recorder,

two bailiffs, six aldermen, and six capital burghesses. It has a market on Saturdays, and sends two members to parliament. It has three handsome streets, and as many parish-churches, with a free-school, and several alms-houses. The streets are neatly paved, and the buildings regular, since the dreadful fire, which almost consumed the whole town, in 1613. The assizes and quarter-sessions for the county are kept here. It is pleasantly seated on the river Frome, on a rising ground, in the midst of pleasant fields and spacious downs. It sends large quantities of beer to London, which is greatly esteemed. The fairs are on February 12, for cattle of all sorts and sheep, Trinity Monday, and July 5, for ditto and lambs, and August 5, for ditto, wool, and leather. It is fifty-two miles east-by-south of Exeter, and one hundred and twenty-four west-by-south of London. Long. 2. 35. W. Lat. 51. 10. N.

DOREE, or JOHN DOREE, a fish, called by authors faber. See *Faber*.

DORIC, any thing belonging to the Dorians, an ancient people of Greece, inhabiting near Mount Parnassus.

DORIC ORDER, in architecture, the second of the five orders, being that between the Tuscan and Ionic.

The Doric, as it is the first, and most ancient of the orders of architecture, so it is the most natural and best proportioned, and that which gave the first idea or notion of regular building. It was indeed more simple at its first invention, than it is at present; and when they came in after-times to adorn and enrich it more, the appellation of Doric was restrained to this richer manner, and then they called the primitive simple manner by the new name of Tuscan.

The characters of the Doric order, as they are now managed, are, the height of its column, which is eight diameters; the frieze, which is adorned with triglyphs, drops, and metopes; its capital, which is without volutes, and its admitting of cymatiums.

The Doric is used by the moderns, on account of its solidity, in large, strong buildings, as in the gates of cities and citadels, the outsidings of churches, and other massy works, in which delicacy of ornaments would not be suitable. Vignola adjusts the proportion of this order as follows: he divides the whole height without the pedestal into twenty parts, or modules, one of which he allows to the base; fourteen to the shaft, or fust; one to the

capital; and four to the entablature: the several parts and members may be seen under their respective articles, *Column*, *Corniche*, *Base*, *Frieze*, &c.

DORIC DIALECT, in grammar, one of the five dialects which were principally in use among the Greeks.

DORIC MODE, in music, the first of the authentic modes of the ancients. It begins D, *la sol, re*. Plato admires the music of the Doric mode, and judges it proper to preserve good manners, as being masculine; and on this account allows it in his commonwealth.

DORMANT, in heraldry, is used for the posture of a lion, or any other beast lying along in a sleeping attitude, with the head on the fore paws; by which it is distinguished from the couchant, where though the beast be lying, yet he holds up his head.

DORMITORY, a gallery in convents or religious houses, divided into cells, in which the religious sleep.

DORONICUM, leopard's bane, in botany, a genus of plants, the root of which is said to be an alexipharmic.

DORSAL, an appellation given to whatever belongs to the back. See *Dorsum*.

DORSAL MUSCLES, the muscles of the back and loins.

DORSIFEROUS PLANTS, such as are of the capillary kind, without stalks, and which bear their seeds on the backside of their leaves.

DORSUM BACK, in anatomy, comprehends all the posterior part of the trunk of the body, from the neck to the buttocks. The back is furnished with several muscles, which are common to it with the loins, as the longissimus dorsi, the sacrolumbaris, and semispinosus; these are called extensors. See *Extensor*.

To the back likewise belong the intertransversales lumborum, the quadratus lumborum, and the psoas. Its bones are the spina dorsi, ribs, and os sacrum. See *Spine*, *Rib*, &c.

DOSE, in medicine and pharmacy, the quantity of a medicine given at one time, or the proportion which the several ingredients of a compound medicine bear to each other.

DOSSIL, in surgery, lint made into a cylindric form, used in dressing a disordered part. They are sometimes secured by a thread, tied round their middle.

DOTTEREL, the English name of a bird called by authors morinellus. See *Morinellus*.

DOUBLE CAST, in husbandry, a term used by the farmers for that method of sowing that does not dispense the necessary quantity of seed for a piece of land at one bout, but requires going over many places twice.

DOUBLE FICHY, or **FICHE**, in heraldry, the denomination of a cross, when the extremity has two points, in contradistinction to *fich'e*, where the extremity is sharpened away to one point.

DOUBLE VESSEL, in chemistry, is when the neck of one bolt-head or matraass is well luted into the neck of another, in order to refine and exalt spirits as high as can be. It is sometimes called a pelican, also a diota.

DOUBLET, among lapidaries, a counterfeit stone composed of two pieces of crystal, and sometimes glass, fastened together with proper colours between them, so as to appear the same to the eye, as if the whole substance of the crystal had been tinged with those colours. The impracticability of imparting tinges to the body of crystals, while in their proper and natural state, and the softness of glass, which renders ornaments made of it greatly inferior in wear to crystal, gave inducements to the introduction of colouring the surface of crystal, wrought into a proper form, in such manner that the surfaces of two pieces so coloured being laid together, the effect might appear the same, as if the whole substance of the crystal had been tinged. The manner of making doublets is as follows:

Let the crystal or glass be first cut by the lapidaries in the manner of a brilliant, except that in this case, the figure must be composed from two separate stones, or part of stones, formed in the manner of the upper and under parts of a brilliant, if it was divided in an horizontal direction, a little lower than the middle. After the two plates of the intended stone are thus cut, and fitted so exactly, that no division can appear when they are laid together, the upper part must be polished ready for setting; and then the colour must be put betwixt the two plates by this method. "Take of Venice or Cyprus turpentine two scruples; and add to it one scruple of the grains of mastich, chosen perfectly pure, free from foulness, and previously powdered. Melt them together in a small silver or brass spoon, ladle, or other vessel, and put to them gradually any of the coloured substances below mentioned being first well powdered; stirring them together as the colour is put in, that they may be thoroughly com-

mixed. Warm then the doublets to the same degree of heat, as the melted mixture; and paint the upper surface of the lower part, and put the upper one instantly upon it; pressing them to each other; but taking care, that they may be conjoined in the most perfectly even manner. When the cement or paint is quite cold, and set, the redundant part of which has been pressed out of the joint of the two pieces, should be gently scraped off the side, till there be no appearance or any colour on the outside of the doublets; and they should then be skilfully set; observing to carry the mounting over the joint, that the upper piece may be well secured from separating from the under one."

The colour of the ruby may be best imitated, by mixing a fourth part of carmine with some of the finest crimson lake that can be procured.

The sapphire may be counterfeited by very bright Prussian blue, mixed with a little of the above-mentioned crimson lake to give it a cast of the purple. The Prussian blue should not be very deep-coloured, or but little of it should be used; for otherwise, it will give a black shade that will be injurious to the lustre of the doublets.

The emerald may be well counterfeited by distilled verdigrise, with a little powdered aloes. But the mixture should not be strongly heated, nor kept long over the fire after the verdigrise is added. for the colour is to be soon impaired by it.

The resemblance of the garnet may be made by dragon's blood; which, if it cannot be procured of sufficient brightness, may be helped by a very small quantity of carmine.

The amethyst may be imitated by the mixture of some Prussian blue with the crimson lake; but the proportions can only be regulated by direction; as different parcels of the lake and Prussian blue vary extremely in the degree of strength of the colour.

The yellow topazes may be counterfeited by mixing the powdered aloes with a little dragon's blood, or by good Spanish annatto: but the colour must be very sparingly used, or the tinge will be too strong for the appearance of that stone.

The chrysolite, hyacinth, v negar garnet, eagle-marine, and other such weaker or more diluted colours, may be formed in the same manner, by lessening the proportions of the colours, or by compounding them together correspondently to the hue of the stone to be imitated; to which end

D O V

it is proper to have an original stone, or an exact imitation of one at hand, when the mixture is made, in order to the more certain adapting the colours to the desired effect: and when these precautions are taken, and the operation well conducted, it is practicable to bring the doublets to so near a resemblance of the true stones, that even the best judges cannot distinguish them, when well set, without a peculiar manner of inspection.

There is, however, an easy method of distinguishing doublets, which is only to behold them betwixt the eye and light, in such position, that the light may pass thro' the upper part and corners of the stone, and that there is no colour in the body of the stone.

DOUBLING, among hunters, who say that a hare doubles, when she keeps in plain fields, and winds about to deceive the hounds.

DOUBLING, in navigation, the act of sailing round a cape, point of land, &c. so as that the cape or point of land becomes between the ship and her former situation.

DOUBLINGS, in heraldry, the linings of robes and mantlings in achievements.

DOUBTING, *Dubitatio*, the act of withholding our assent from any proposition, from not being able peremptorily to decide between the reasons for and against it.

DOUBTING, in rhetoric, signifies the debate of the mind with itself, upon a pressing difficulty. It is for the most part expressed by interrogation, though that is not necessary.

DOVE, *Columba*, in ornithology. See *Pigeon*.

DOVER, by the Romans called *Portus Dubris*, a town of Kent, and one of the cinque ports, enjoying great privileges. Its situation is very romantic, it lying in a great valley, and the only one on this coast where the water is admitted within the cliff, which is here very high; and at this place a running brook discharges itself into the sea. The piers that form the haven, or large basin, are costly great works. Above it is a fort, with four bastions, of modern date; and the broad beach, which lies at the mouth of this great valley, is very delightful. The castle is the strongest place in the world of an old fortification, for it takes up thirty acres of ground. It is an amazing mass of walls, ditches, arches, embattlements, mounts, and other contrivances to render it impregnable. In queen Anne's wars, they kept fifteen hundred prisoners in this castle; but they have since carried away the timbers and

D O X

floors, inasmuch that it is not now fit for that use. The brass gun called queen Elizabeth's pocket-pistol, is a great curiosity it being twenty-two feet in length; it requires fifteen pounds of powder, and carries a ball seven miles; it is also excellently wrought. Dover had formerly seven churches, which are now reduced to two. It is governed by a mayor, twelve jurats, and thirty-seven common-council-men, and has two markets weekly, on Wednesdays and Saturdays. It sends two members to parliament, and who have the title of barons of the cinque ports. The channel between France and England is here not above twenty-one miles over, for which reason, there is, in time of peace, a packet-boat stationed, which goes between Dover and Calais, and is a safe and easy passage. It has only one fair, on November 22, for wearing apparel and haberdashery ware. It is fifteen miles south-east of Canterbury, and seventy-two east-by-south of London. Long. 1. 24. E. Lat. 15. 8. N.

DOVE-TAILING, in carpentry, is the manner of fastening boards together, by letting one piece into another, in form of the tail of a dove.

DOWAGER, *Dotissa*, a widow endowed, is a title applied to the widows of princes, dukes, earls, and persons of high rank only.

DOWER, that portion which the law allows a widow out of the lands of her husband, after his decease.

DOWLE-STONES, in our old writers, the same with land-mark.

DOWRY, *Dos*, the money or fortune which the wife brings her husband in marriage: it is otherwise called *maritagium*, marriage goods, and differs from dower. See *Dower*.

DOWRY, in a monastic sense, a sum of money given with a maid, upon entering her in some religious order.

DOXOLOGY, an hymn in praise of the Almighty, distinguished by the title of greater and lesser. The lesser doxology was anciently only a single sentence, without response, running in these words, "Glory be to the Father, and to the Son, and to the Holy Ghost, world without end, Amen." Part of the latter clause, "As it was in the beginning, is now, and ever shall be," was inserted sometime after the first composition. Some read this ancient hymn, "Glory be to the Father, and to the Son, with the Holy Ghost." Others, "Glory be to the Father, in or by the Son, and by the Holy Ghost." This difference

difference of expression occasioned no disputes in the church, till the rise of the Arian heresy; but when the followers of Arius began to make use of the latter, as a distinguishing character of their party, it was entirely laid aside by the Catholics, and the use of it was enough to bring any one under suspicion of heterodoxy. The doxology was used at the close of every solemn office. The Western church repeated it at the end of every psalm; and the Eastern Church at the end of the last psalm. Many of their prayers were also concluded with it, particularly the solemn thanksgiving, or consecration prayer at the eucharist. It was also the ordinary conclusion of their sermons. The greater doxology, or angelical hymn, was likewise of great note in the ancient church. It began with these words, which the angels sung at our Saviour's birth, "Glory be to God on high, &c." It was chiefly used in the communion service, and in mens private devotions. Both the doxologies have a place in the church of England, the former being repeated after every psalm, and the latter used in the communion service.

DRACO VOLANS, in meteorology, a fiery exhalation frequent in marshy and cold countries.

DRACO, in astronomy, a constellation of the northern hemisphere, said to contain from 31 to 49 stars.

DRACUNCULI, in medicine, small long worms, which breed in the muscular parts of the arms and legs, called Guinea-worms. This distemper is very common in Guinea, and principally among the natives; Kempfer found it so also at Ormuz, upon the Persian gulph, and likewise in Tartary. Dr. Tawne, in his Treatise of the Diseases of the West-Indies, informs us, that this distemper is not so frequent any where as on the Gold Coast, at Anamaboe, and Cormantyn.

DRACUNCULI, a disease in children, arising from little worms called by that name. See *Worm*.

DRACUNCULUS, dragons, in botany, a genus of perennal plants, being a native of the southern parts of Europe, and cultivated in our gardens. The dracunculus appears to be similar in medicinal virtues, as in botanic characters, to arum; the roots and leaves being, like those of that plant, extremely acrimonious. It might therefore be used in the same cases as arum, but general practice employs only the latter. So far as can be judged between substances of such vehement pun-

gency, the dracunculus is rather the strongest of the two. See *Arum*.

DRAGON, *Draco*, in zoology, an animal called also the flying lizard, being furnished with two lateral, membranaceous, and radiated wings: it is a true lizard, with a naked and four-legged body, and a long tail: though there are not wanting some who deny the existence of any such animal.

DRAGON'S BLOOD, *Sanguis Draconis*, in natural history, a moderately heavy resin, of a red colour, brought from the East Indies. There are two sorts of it; one in small oval drops, of a fine deep red, which is heightened into a crimson on grinding them into powder; the other is in larger masses, apparently composed of tears: of these, some are of a pale dull red, others of a deep one, not at all inferior to the drop sort. The drops and the lumps are supposed to be the produce of two different trees. The lump sort is said to exude from the trunks of certain palms growing in the Madeira and Canary islands; the drops to be artificially extracted from the fruit of a tree. This drug has been sometimes counterfeited with artificial compositions, coloured with the true dragon's blood or Brazil wood: these are distinguished by their either dissolving in water like gums, or crackling, and not burning in the fire. The spirituous tincture stains cold marble of a bright flesh colour; to warm marble it gives a deeper red, in proportion to the degree of heat. Mr. du Fay observes, that by this one ingredient, with the addition of a little pitch for the darker colours, all the various shades of red may be obtained, from the lightest to the deepest; that it does not sink near so far into cold as into hot marble; and that the not sinking is rather an advantage than an imperfection, as the colours which sink must also spread, so as to render the drawing of fine designs impracticable; that the best way of obtaining beautiful reds from dragon's blood is, to put the powdered resin into spirit of wine over the fire, and apply on the marble with a pencil, the finer part of the solution which rises up about the sides of the vessel, adding fresh spirit in proportion to the evaporation, till the dragon's blood yields no more tincture. This resin, is usually looked upon as a gentle incassant, desiccative, and restringent; and sometimes prescribed in these intentions against alvine and uterine fluxes, and ulcerations both internal and external.

DRAGON

DRAGON FLY, the libellâ. See *Libella*.

DRAGON SHELL, the English name of a species of concamerated patella, with its rostrum very much bent. See *Patella*.

DRAGONNEE, in heraldry, a lion dragonné is where the upper half resembles a lion, the other half going off like the hinder part of a dragon. The same may be said of any other beast.

DRAGOON, in the military affairs, a musqueteer, mounted on horseback, who sometimes fights or marches on foot, as occasion requires.

DRAGOON, in ornithology, the name of a small kind of carrier-pigeon, called *columba tabellaria minima*, by Moore.

DRAINING of Lands. See *Fen*.

DRAINS, in the fen-countries, certain large cuts or ditches, of twenty, thirty, nay sometimes forty feet wide, carried through the marshy ground, to some river, or other place, capable of discharging the water they carry out of the fen-lands. See *Fen*.

DRAKE, in ornithology, the male of the duck-kind.

* **DRAKE** (sir FRANCIS), a distinguished naval hero, in the glorious reign of Q. Elizabeth, was born near Tavistock, in Devonshire, in the year 1545. He rendered his name immortal, and increased the reputation of England at sea, by the most glorious success in several expeditions against the Spaniards, taking rich ships, plundering and burning Spanish towns in America; and by being the first commander in chief, and the first Englishman who sailed round the world: for which he was knighted at Deptford by queen Elizabeth, on board his own ship, April 4, 1581, which was preserved as a monument of his glory, and, upon its decay, a chair was made of its planks, and presented to the university of Oxford, where it is still preserved. After receiving the above honour, sir Francis in 1585, sailed again to the West Indies, and took the cities of St. Jago, St. Domingo, Carthagena, and St. Augustin. In 1587 he proceeded to Lisbon, with a fleet of thirty sail, and having received intelligence of a large fleet assembled in the bay of Cadiz, which was to have made a part of the Spanish armada, he entered that port; burnt there upwards of ten thousand ton of shipping; and then having intelligence of a large carrack expected at Tercera from the East Indies, he sailed thither, and though his men were in great want of provisions, by fair words, and large

promises, he prevailed on them to endure these hardships for a few days; within this space the East India ship arrived, which he took and carried home in triumph. In 1588, sir Francis Drake was appointed vice-admiral, under the lord Howard, high admiral, when he made prize of a large galleon, and had a great share in destroying the Spanish armada. In short, he was at length joined in commission with sir John Hawkins, and sent again to distress the Spaniards in the West Indies; but this expedition proved unfortunate, and this worthy and brave admiral died, on the 28th of January, 1595-6, before his return.

DRAM, or **DRACHM**, in commerce, a small weight. See *Weight*.

DRAMA, a poem representing a true picture of human life. The principal species of the drama are two, namely comedy and tragedy. Some others there are of less note, as pastoral, satire, tragi-comedy, opera. &c. See *Tragedy*, *Comedy*, &c.

The primary part of the drama, as divided by the ancients, are the protasis, epitasis, catastasis, and catastrophe. The secondary parts are the acts and scenes. The accessory parts are the prologue, chorus, mimus, and epilogue, which pointed out the use of the piece, or conveyed some other notice to the audience in the poet's name. See *Protasis*, *Prologue*, *Chorus*, &c.

The drama, says Vossius, owes its rise to the days of festivity; for in ancient times, it was usual for men, when they gathered in the fruits of the earth, to meet together, that they might sacrifice to the Deity, and unbend their minds from the fatigues of the harvest. Hence arose two sorts of poetry, the one grave, in praise of the gods, the other jocular and full of lampoon, against one another. Thus, from the former arose tragedy, and from the latter, satire, comedy, and mimicry.

The drama, in some circumstances, is superior to epic poetry, particularly in action; for in the drama, the persons themselves are introduced, every thing is transacted in our sight, and our eyes and ears at once are gratified. Besides, the action in the drama is much more compendious than the epic: it takes up less time, and therefore requires more art to conduct it. It excites in the mind more rapid commotions, and consequently makes the pleasure and admiration more intense.

The dramatic poetry of the Romans was at first divided into three sorts, tragedy, satire, and comedy; which were afterwards

wards subdivided into several species. They had two species of tragedies, viz. the tragœdiæ palliatæ, in which the personages, and manners, and dresses, were entirely Greek; and the tragœdiæ prætextatæ, or prætextæ, wherein the personages and manners were Roman. The satire was a kind of pastoral poetry, which some authors assert to have held a kind of middle rank between tragedy and comedy; which is almost all we know of it. Comedy, was divided first into two species, viz. the Greek, or paliata; and the Roman, or togata, by reason of the introducing plain citizens into the latter, whose dress was called toga. The Roman comedy was again subdivided into four species; the togata, properly so called, the tabernalia, the attellana, and the mimus. Pieces of the first sort were very serious, and admitted even of persons of distinction, for which reason they were sometimes called prætextatæ. The second were comedies of a less serious nature, and took their name from taberna; which strictly signified a place of rendezvous, proper for assembling persons of different conditions, whose characters were played off in those pieces. The attellana was a kind of piece very like the Italian comedies; that is, those whose dialogues are not written. The actor, therefore, of the attellanæ performed his part just as he pleased. The mimus resembled our farces, and the actors thereof performed always bare-footed; whereas, in tragedy, they wore a sort of shoe, or boot, called cothurnus; and, in the other species of comedy, another kind called succus. See the articles *Unity, Action, Character, Fable, &c.*

DRAMATIC, an epithet given to pieces written for the stage.

DRAPERY, in sculpture and painting, the representation of the cloathing of human figures, and also hangings, tapestry, curtains, and most other things that are not carnations or landscapes. The art of drapery consists, 1. In the order of the folds or plaits, which ought to be so managed, that you may easily perceive what it is they cover, and distinguish it from any thing else. Again, the folds ought to be large, as breaking and dividing the sight the less; and there should be a contrast between them, otherwise the drapery will be stiff. 2. In the quality of the stuffs; for some make their folds abrupt and harsh, others more soft and easy: the surface of some have a lustre, others are flat and dead: some are fine and transparent, others firm and solid. 3. In the

variety of colours, which when well managed, makes the greatest beauty of painting; all not being equally amicable and friendly with respect to each other, and some never to be placed near certain others. M. De Piles observes, that drapery must never be made to adhere to the parts of the body; that a great motion and lightness of the drapery are only proper in figures in great agitation, or exposed to the wind; and that the nudities of the figures should always be designed before the painter proceeds to the draperies.

DRASTIC, in physic, an epithet bestowed on such medicines as are of present efficacy, and potent in operation; usually applied to emetics and cathartics.

DRAUGHT, or **DRAFT**, in architecture, the figure of an intended building, described on paper, in which is laid down by scale, the several divisions and partitions of the apartments, rooms, doors, passages, &c. in their due proportion to the whole building. It is customary, and convenient, for any person, before he begins to erect a building, to have designs or draughts drawn upon paper or vellum, wherein the ichnography or ground-plot of every floor or story is delineated; as also the form or fashion of each front, with the windows, doors, ornaments, in an orthography, or upright. Sometimes the several fronts, &c. are taken and represented in the same draught, to shew the effect of the whole building, which is called scenography, or perspective. See *Scenography*.

DRAUGHT-COMPASSSES, such as have moveable points to draw fine draughts in architecture.

DRAUGHT, in trade, a small allowance on weighable goods made by the king to the importer, or by the seller to the buyer, that the weight may hold out when goods are weighed again.

DRAUGHT-HORSE, in farming, a sort of coarse-made horse, destined for the service of the cart or plough. The draught-horse should be large-bodied, and strong loined, and of such a disposition as rather to be dull than too brisk; and rather to crave the whip than to draw more than is needful. Mares are the fittest for this use for the farmer, as they will be kept cheap, and not only do the work, but be kept breeding, and give yearly increase of a foal of the same kind, and fit to be bred to the same purposes. They should have a good head, neck, breast, and shoulder: for the rest of the shape, it is not of much consequence. See *Foal*.

DRAW.

DRAW-BACK, in commerce, certain duties of the customs or excise, allowed upon the exportation of some of our own manufactures; or upon certain foreign merchandize, that have paid duty on importation.

DRAW-BRIDGE, a bridge made after the manner of a floor, to draw up, or let down, as occasion serves, before the gate of a town or castle. See *Bridge*.

In navigable rivers it is sometimes necessary to make the middle arch of bridges with two moveable platforms, to be raised occasionally, in order to let the masts and rigging of vessels pass through.

DRAWER of a bill of Exchange, one who draws the bill upon his correspondent.

DRAWING, in general, the action of pulling out, or haling along: thus we read of tooth-drawing, wire-drawing, &c. See *Tooth* and *Wire*.

DRAWING, the art of representing the appearances of objects by imitation, or copying.

The general precepts for drawing, are as follow: 1. Begin with plain geometrical figures, as lines, angles, triangles, polygons, arches, circles, ovals, cones, cylinders, and the like, being the foundation of all other proportions. The circle is of use in the several orbicular forms, as the sun, moon, globes, &c. the oval in giving a just proportion to the face and mouth; and the square confines a picture you are to copy, &c. the triangle is of use in drawing a side or half face; angles and arches in perspective, and the polygon in ground-plots, fortifications, &c. the cone in spires, steeples, tops of towers, &c. the cylinder in columns, pillars, pilasters, &c. See *Perspective*.

2. Having brought your hand to be fit and ready in general proportions, accustom yourself to give every object its due shade, according to its concavity or convexity, and to elevate or depress the same, as the object appears either nearer or farther off the light. See *Proportion*, *Design*, and *Shade*.

3. The second practice of drawing consists of forming fruits, as apples, pears, cherries, &c. with their leaves; the imitation of flowers, as roses, tulips, carnations, &c. herbs, trees, &c. of different kinds.

4. The third in the imitation of beast, fowls, fishes, &c.

5. The fourth practice of drawing consists in the imitation of the body of man,

with all its lineaments, as head, nose, eyes, ears, cheeks, arms, and shadows, all exactly proportioned, both to the whole, and to one another.

6. The fifth is in the drapery, in the imitation of cloathing, and artificially setting off the outward coverings, habit, or ornaments of the body, either of cloth, stuff, silk, or linen, in their natural and proper folds. See *Drapery*.

7. In drawing of all the forms before-mentioned, it is requisite to be first perfect in the laying down the exact proportion; secondly, in the general or outward lines, before you proceed to shadowing, or trimming the work within.

8. In mixed and uncertain forms, where the circle, square, &c. will be of no use, but only in the idea thereof in your own fancy, as horses, oxen, and the like, you must do it by judgment, and so gain the true proportions by assiduous practice: thus, having the shape of the thing in your mind, first draw it rudely with a coal; then with more exactness, with a lead or pencil; then peruse it well, and mend it in those parts you have erred in, according to the idea you carry in your mind. When it is mended by your own judgment, compare it with some good pattern of the same kind, and amend it by that.

9. Having good copies to draw after, learn to reduce them to other proportions, either larger or smaller, and this by frequent practice.

10. Let a perfection in drawing be attained by diligent exercise, and the instruction of a good master, before there be any attempts as to colouring and painting; for the former being attained, the latter will be easily understood, and gained by frequent practice.

DRAWING - MEDICINES, those more usually called epispastics and ripeners.

DRAWING, among sportsmen, the beating the bushes after a fox.

Fine **DRAWING**, the art of sewing up button-holes, rents in cloth, in so nice a manner that they cannot be discovered from the entire part of the cloth.

DRAY, a kind of cart used by brewers for carrying barrels of beer, also a sledge drawn without wheels.

DREIN, in the military art, a trench made to draw the water out of a moat, which is afterwards filled with hurdles and earth, or with fascines, or bundles of rushes and planks, to facilitate the passage over the mud. See *Trench*.

DRENCH,

DRENCH, among farriers, a physical potion for horses.

DRESSING of Hemp and Flax. See *Hemp and Flax*.

DRESSING of Ores, the preparing them, as they come rough from the mine, for the working by fire.

DRESSING, in surgery, the treatment of a wound or any disordered part. The apparatus of dressing consists of dossils, tents, plasters, compresses, bandages, bands, ligatures, and strings.

DRIFT of the Forest, an exact view and examination taken at certain times to know what beasts are there; in order that none may come on the forest but such as have right; and that the forest be not overcharged with beasts.

DRIFT, in mining, a passage cut out under the earth, betwixt shaft and shaft.

DRIFT, in navigation, the line upon which a ship drives in a storm with her side to the wind, when it blows so violent as to prevent her from being able to carry any sail, or only enough to keep her sufficiently inclined to one side, that she may not carry away her mast by violent rocking: or, drift is the angle which the line of her motion makes with the keel in such a situation when her prow is in the middle between the points of the compass, to which she comes up and falls. See *Trying*.

DRILL, in mechanics; a small instrument for making holes. Drills are of various sizes, and are chiefly used by smiths and turners.

DRILL, or **DRILL-BOX**; a name given to an instrument for sowing land in the new method of horse-hoeing husbandry. It plants the corn in rows, makes the channels; sows the seeds in them, and covers them with earth when sown; and all at the same time, and with great expedition. The principal parts are the seed-box, the hopper, the plough and its harrow, of all which the seed-box is the chief. It measures, or rather numbers, out the seed, which it receives from the hopper, and has for this purpose an artificial hand; but it delivers out the seed much more equally than can be done by a natural hand. See *Plough*.

DRINK, a part of our ordinary food in a liquid form, serving to dilute. See *Diet*.

The drinks in different countries are different. The common drink in England is either water, malt liquor, wine, or mixtures of these.

The first drinks of mankind were certainly water and milk, but the love of luxury and debauchery soon introduced the art of preparing intoxicating and inebriating drinks out of vegetables.

Of all kinds, water is the least flatulent, because the unelastic air lodged in it, cannot be extricated by the heat of the body, so as to become elastic.

DRIVER, in naval affairs, an oblong sail hoisted occasionally to the mizen-peak when the wind is very fair.

DRIVERS, among sportsmen, a machine for driving pheasant-powts, consisting of good strong ozier-wands, such as the basket-makers use; these are to be set in an handle, and twisted or bound with small oziars in two or three places. With this instrument the sportsman drives whole eyes of young powts into his nets.

DRIVING, among sportsmen, a method of taking pheasant powts. It is thus performed: the sportsman finds out the haunts of these birds; and having fixed his nets there, he calls them together by a pheasant-call, imitating the voice of the dam: after this he makes a noise with his driver, which will make them run a little way forward in a cluster; and this he is to repeat till he has made sure of them, which an expert sportsman never fails to do, by driving them into his nets.

DRIVING, in metallurgy, is said of silver, when in the operation of refining, the lead being burnt away, the remaining copper rises upon its surface in red fiery bubbles. See *Silver*.

DROMEDARY, *Dromedarius*, a large animal of the camel-kind, with only one bunch on its back: it is taller than the horse, and has a much longer and slenderer neck. It is a native of Asia, and more used for riding on, than for carrying heavy loads.

DRONE, in the history of insects, a kind of male bee, larger than the common working or honey-bees: it is so called from its idleness, as never going abroad to collect either honey or wax. See *Bee*.

DRONE-FLY, a two winged insect, like the common drone bee.

DROPS, in architecture, an ornament in the Doric entablature, representing drops, or little bells, immediately under the triglyphs.

DROPSY, in medicine, a preternatural collection of extravasated aqueous serum, which greatly distends the vessels in any part of the body.

This disease may therefore happen in whatever part of the vessels destined for the conveyance of the serum are found ; that is, either in the whole habit of body, or in any particular part thereof.

A dropfy may arise from a sordid collection of water, either between the external integuments of the head ; between these and the cranium ; between the cranium and the membranes of the brain ; between these membranes and the duplicatures ; between these duplicatures and the brain ; between the foldings of the brain ; and, lastly, in its cavities, but yet without producing immediate death.

This disorder is easily known, but the last-mentioned species of it is incurable ; whereas the others are either to be cured by gentle cauterizing, terebration, or puncture, prudently and cautiously practised ; exhibiting, at the same time, hydragogues and corroboratives, internally ; or they are to be removed by the external application of discutients.

All the disorders of this kind are produced, first, by every cause which is capable of so confining the serum, that it cannot return into the veins, but stagnates in the distended vessels ; or, secondly, by every cause which so ruptures the vessels, that the serum is discharged within the slender membranes ; or, thirdly, by every cause which so obstruct the vessels which convey the fluids from the cavities, or so little moves the humours contained in them, that they are neither axhaled nor re-absorbed.

The causes of this kind are principally observed to be an hereditary and natural disposition ; the sudden drinking of too large quantities of cold liquors, which are neither discharged by vomit, stool, sweat, nor urine, excited by heat or motion ; acute diseases, either accompanied with an insatiable thirst, or excessive drinking, or without these circumstances ; a licenteric dysentery long protracted ; quartan fevers ; licenterics ; diarrhoeas ; dysenteries of long standing ; the coeliac passion ; empyemas ; a spitting of blood ; the gout ; excessive evacuations of any kind, and especially of the arterial blood ; drinking of acrid and fermenting liquors ; viscid aliments, and such as are of difficult digestion ; a considerable number of large hydatides hanging pendulous in the cavity of the abdomen ; and many other disorders of a similar nature, such as melancholy, the scurvy, and some others.

The effects and progress of this disease are generally as follows ; the feet become

tumid, especially towards evening ; and this tumour is gradually increased and augmented ; then a daily increasing tumour appears, in the abdomen. In a tympanites the distended abdomen sounds when struck ; in an ascites, when the water flows freely in the cavity of the abdomen, the noise of fluctuating water is heard upon moving the body : but in that species of ascites, where the waters are included in their proper vesicles, this symptom does not always happen, and consequently is not to be depended on. Add to these a difficulty of breathing, thirst, a sensation of weight, torpor, costiveness ; a small discharge of urine, a slow fever, no evacuation by sweat, a degree of leanness and extenuation in the general habit, proportioned to the largeness of the tumour, in the particular part affected : then appears an anasarca of the thighs, scrotum and abdominal skin ; hydatides ; an acrimony of the water, become stagnant and putrefied, in consequence of the heat and closeness of the part in which it is confined ; ulcers, gangrenes, hæmorrhages from the nose, an exomphalus, a sphacelus of the viscera, and at last the death of the patient.

In the cure of the dropfy the following intentions are to be pursued.

First, to produce a due fluidity, and motion to the lymph, whether it is water or serum, of the bilious, ichorous, or bloody kind.

Secondly, to evacuate the waters already discharged into the cavities of the body.

Thirdly, to remove the weakness of the viscera, whether this weakness is the cause or the effect of the dropfy.

The fluidity of the lymph is procured, by removing those causes which prevent such a fluidity ; which are, first, the too languid force of the vital powers subservient to circulation ; secondly, the compression, rupture, or obstruction of the vessels ; and, thirdly, the excessive or preternatural viscosity of the fluids.

With respect to the too languid force of the vital powers subservient to circulation, this is most commodiously removed by cardiacs, corroboratives, and medicines of a stimulating quality, which, if the patient is not afflicted with a violent thirst, are to consist of aromatic, saline, oleous, and hot substances ; which may be easily prepared in the various forms of electuaries, mixtures, medicated wines, medicated ales, pills, decoctions, syrups, or lozenges.

Boerhaave.

D R U

DROP-WORT, in botany. See *Filipendula*.

DROSER, sun dew, in botany, a genus of plants.

DROWNING, the act of suffocating, or being suffocated, by water.

DRUG, a term for goods of the drug-gift and grocery kinds, especially for those used in medicine and dying.

DRUGGET, in commerce, a stuff sometimes all wool, and sometimes half wool and half thread; sometimes corded, but usually plain.

* **DRUIDS**, in antiquity, the priests of the ancient Britons, who performed the public and private sacrifices, were the expositors of what concerned religion; and the arbiters of all differences, whether of a public or private nature; and if any private person, or even magistrate refused to abide by their decision, he was looked upon as impious, and forbid to assist at the sacrifices. Great numbers of youths put themselves under their discipline; these they taught in verse, and made them get their poetical instructions by heart. Their principal doctrines were the immortality and transmigration of souls; the virtue and power of the gods; the motion of the stars; the magnitude of the earth, and the nature of things. They had a particular veneration for mistletoe, and the oak that produces it: had their sacred groves of oak; and with great cruelty sacrificed human victims. The Druids had one who presided over the rest; and, when he died, one of their body was chosen his successor.

DRUM, *Tympanum*, a martial musical instrument in form of a cylinder, hollow within, and covered at the two ends with vellum.

Kettle DRUMS, two sorts of large bassons of copper or brass, rounded in the bottom, and covered with vellum or goat-skin, which is kept fast by a circle of iron, and several holes fastened to the body of the drum, and a like number of screws to screw up and down. They are much used among the horse, as also in operas, oratorios, concerts, &c.

DRUM, or **DRUMMER**, he that beats the drum, of whom each company of foot has one, and sometimes two. Every regiment has a drum-major, who commands the other drums.

DRUNKENNESS, *Ebrietas*, a preternatural compression of the brain, and a discomposure of its fibres, occasioned by the fumes or spirituous parts of liquors.

D R Y

* **DRYADES**, in Pagan mythology, nymphs or goddesses of the second rank, who inhabited the woods and forests, residing in their particular trees, with which they were thought to be coeval. The oak was generally their choice, whence they received their name from an oak.

* **DUBLIN**, a large city of Ireland, and the capital of the whole kingdom. Its situation is delightful and salubrious, having hills on the south, plains on the west, the Liffy, a navigable river running through it to Dublin-haven into the sea. A bar at the mouth of the Liffy renders its harbour very inconvenient, so that ships of any burthen dare not venture in. In Dublin is a flourishing university, with about 600 students; and it is the see of an archbishop, with a stately cathedral, dedicated to St. Patrick; of which the famous Dr. Jonathan Swift was once dean; also a handsome palace called St. Sepulchre. Here are no less than 13 parochial churches; but the lord lieutenant and lords justices go in state to Christ's-church. This city being the seat of government, the lord lieutenant (a kind of Viceroy sent from England, and generally changed every three years) resides in the castle while he stays in the kingdom. Here are also held courts of justice, and public offices; besides a guildhall, tolseel, and custom-house. Dublin lies 64 miles west of Holyhead, in Wales, and 268 north-west of London. Lat. 55. deg. 12. min. N. Long. 6. deg. 55. min. W.

* **DRYDEN (JOHN)** one of the greatest English poets of the seventeenth century, was the son of Erasmus Dryden, third son of sir Erasmus Dryden, bart. He was born at Oldwincle, in Huntingdonshire, on the 9th of August, 1631; educated at Westminster school under Dr. Busby; and was from thence, in 1650, elected a scholar of Trinity-college in Cambridge. During his stay at school, he translated the Third Satire of Persius, for a Thursday-night's exercise. In 1658, he published his Heroic Stanzas, on the late lord protector; and in 1660, a Poem on the Restoration of king Charles II. The same year he published his Poem to the king, on his coronation. In 1662, he addressed a poem to the lord chancellor Hyde; and the same year published a satire on the Dutch. His next piece was his *Annis Mirabilis*. In 1668, Mr. Dryden, upon the death of Sir William Davenant, was made poet laureat, and historiographer to Charles II. and the same year published

D U C

his *Essay on Dramatic Poesy*. His first play, entitled *The Wild Gallant*, appeared in 1669, and was followed, in the space of twenty-five years, by twenty-six others, which have been since published in six volumes, duodecimo. In 1679, was published an *Essay on Satire*, written jointly by Mr. Dryden, and the earl of Mulgrave. This piece, which was first handed about in manuscript, contained reflections on the duchess of Portsmouth, and the earl of Rochester; they, it is said, suspecting Mr. Dryden to be the author, hired three men, who took their opportunity to cudgel him in Will's coffee-house, in Covent-garden. Mr. Dryden next published his *Abraham and Achitophel*, his *Medal*, his *Religio Laici*, *Hind and Panther*, *Ode on St. Cecilia's day*, &c. Soon after the accession of king James II. he turned Roman catholic, which occasioned his being dismissed from the office of poet laureat, at the Revolution. Mr. Dryden also wrote a *Translation of Freinoy's Art of Painting*: a translation of all *Virgil*, and several other original pieces and translations. Mr. Dryden was remarkable for his modesty and his humane disposition. His poems are justly admired, and would have been still more perfect, had he not been obliged to write for bread: some of these, and particularly his *Ode on St. Cecilia's day*, are, perhaps, the most perfect pieces in any language. The late satirist, Charles Churchill, was a great admirer of the works of Dryden, and has frequently declared it as his opinion, that Pope was infinitely inferior to him as a Poet. This great poet died on the 1st of May, 1701, and was interred in Westminster Abbey, where a monument has been since erected over him by John late duke of Buckingham. Mr. Dryden married the lady Elizabeth Howard, daughter of the earl of Berkshire, by whom he had three sons, Charles, John, and Henry.

DUCAL, something belonging to a duke. See *Duke*.

DUCAL CROWN, or **CORONET**. See *Crown*.

DUCAT, a coin current in Germany and other countries. See *Exchange*.

DUCK, *Anas*, in ornithology, a genus of birds sufficiently known. There are two sorts of ducks common in England, the tame and wild; the first of which is very beneficial to husbandmen, and not expensive to keep, living on loaf corn, worms, snails, &c. Indeed once a year this fowl is a great layer of eggs; and when the

D U N

fits, must be carefully fed with barley or other grain. Ducklings are fed in the same manner as goslings, and may be fattened in three weeks time, by giving them any kind of pulse or grain, and plenty of water.

DUCT, or **DUCTUS**, any tube or canal.

Their use in the animal œconomy is to convey fluids secreted in the glands of the parts to which they severally belong: thus it is, the salival ducts discharge the saliva, or pellucid liquor, secreted in the glands of the mouths; and so of the rest.

DUCTILITY, in physics, a property of certain bodies, whereby they are capable of being expanded, or stretched forth, by means of a hammer, press, &c. The vast ductility of some bodies, especially gold, is very surprising. See *Divisibility*.

DUEL, a single combat, at a time and place appointed, in consequence of a cartel or challenge. Authorized duels were such whose motive was the good of their country, when one, or a small number of combatants were chosen to save the blood of a whole army, and decide, by victory or death, the quarrels of kings or whole nations.

DUKE, the title of a sovereign prince, as the duke of Savoy, Parma, Mecklenburgh, &c. the grand duke of Tuscany, Muscovy, &c. or it is the title of honour and nobility next below princes.

DULCIFYING, in pharmacy, the sweetening, or rendered insipid, any matter impregnated with salts, by washing it in pure water.

* **DUNBAR**, battle of, September 3, 1650. About the middle of July, Cromwell, at the head of an army amounting to eighteen thousand men, began his march for the Scottish border, where he published his manifesto, and understood that the Scots were encamped, to the number of eight and twenty thousand men, well armed and equipped, in the neighbourhood of Edinburgh. They had ordered all the people to quit the country between Berwick and the capital, and remove their effects; so that Cromwell advanced without opposition through a desolate country, attended by a fleet which supplied him with provision. He found the enemy so strongly intrenched between Leith, Edinburgh, and Dalkeith, that he could not attack them with any prospect of advantage, and thought proper to retreat towards Musselburgh.

Leiley

D U N

Lesley detached a body of horse to fall upon his rear, commanded by Lambert, over whom they gained some advantage. Next day a hot skirmish happened between two detachments; and the Scots were repulsed to their camp with considerable loss. Cromwell made another motion towards them, in hopes of drawing them from their intrenchments; but all his efforts were ineffectual. After the two armies had remained in sight of each other for several weeks, Cromwell was so straitened for want of provision and forage, that he found himself under a necessity of retiring. He resolved to embark his infantry on board of the fleet, and return with his horse to Berwick. With this view he marched to Dunbar, where his navy lay at anchor; and by this time his army was diminished to about twelve thousand men. He was followed by the Scots, who encamped upon a hill, at the distance of a mile from Dunbar, in full confidence of putting an end to the war, by the destruction of the whole English army. Indeed Cromwell was now reduced to such difficulty, that he could neither embark his troops, prosecute his march, nor remain in his present situation, without exposing his army to the most imminent danger of being defeated or starved. General Lesley, sensible of his advantage, resolved to keep his ground, and watch the motions of the enemy; but, the clamours of the ministers, who attended the camp, and boldly promised victory in the name of the Lord, excited such a spirit of impatience among the soldiers, that he was obliged to yield to the torrent, and put his army in motion to attack the English. Cromwell had spent his time in preaching, praying, and seeking the Lord, from whom, he said, he received particular comforts and conveniences, during the exercise of his devotion. On the second day of September, perceiving the Scots in motion, he exclaimed, "The Lord has delivered them into our hands;" and ordered his army to sing psalms, as if he had already been assured of the victory. Indeed, he had no great reason to doubt of his success against such an enemy. He then advanced towards them, and next morning before day light, began the attack. The Scottish cavalry on the right wing made a vigorous charge; but were soon repulsed, broken, and put to flight: the left wing abandoned the field without engaging. Three regiments of their infantry stood until they were cut in pieces; but all the rest fled with the ut-

D U N

most precipitation. Above three thousand were slaughtered on the spot, and in the pursuit; and among these some ministers, in the very act of encouraging them with assurance of victory. Seven or eight thousand were taken, together with seven and twenty pieces of cannon, all their baggage and ammunition; while, on the other hand, the English did not lose above forty men in the engagement. Cromwell immediately took possession of Leith and Edinburgh; but, the castle held out till the latter end of December.

DUNG, in agriculture, is of several sorts, as that of horses, cows, sheep, hogs, pigeons, geese, &c. All kinds of dung contain some matter, which, when mixed with the soils, ferments therein, and, by that fermentation, dissolves the texture of the earth, and divides and crumbles its particles very much. This is the real use of dung in agriculture; for as to the pure earthy part of it, the quantity is so very small, that it bears an extremely inconsiderable proportion to that of the earth it is intended to manure. The acrimony of the salts of dung is so great, that the nicest managers of vegetables we have, (the florists) have wholly banished the use of it from their gardens. The use of dung should also be forbid in kitchen gardens, for it is possible to succeed full as well without it: and it gives an ill taste to all excellent roots and plants that are to stand in the earth in which it is an ingredient.

Another disadvantage attending the use of dung is, that it gives rise to worms. It is for this reason, that garden carrots are generally worm-eaten, and field carrots sound; and the same observation will hold good in other vegetables, in the field, and in the garden.

However unnecessary and prejudicial dung is in gardens, it is however very necessary in the corn-fields, and little can be done without it in the old method of husbandry. Dung is not so injurious in fields as in gardens; because it is used in much smaller quantities in proportion to the quantity of soil; and cabbages, turnips, potatoes, and other things growing in fields, and intended only for the food of cattle, will not be injured by dung, tillage, and hoeing all together; for the crops will by this means be the greater, and the cattle will like the food never the worse. Dung is very beneficial in giving large crops of wheat; and is found by experience, that the country farmers, at a distance from a large town, can never have so good crops
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by all their tillage, as those who live in the neighbourhood of the cities, where dung is produced in great plenty, and easily had. The dung used in fields, besides its dissolving and dividing virtue, is of great use in the warmth its fermenting gives to the young plants of the corn in their weakest state, and in the most severe seasons; the lasting of this ferment is not easily determined, because the degrees of heat are very difficult to be judged of, when they become small.

The uses of the dung of several animals are sufficiently proved every day. They are used to repair the decays of exhausted and worn out land, and to cure the several defects in different naturally bad soils; the faults of which are as different, as the nature of the different dungs used to improve them. Some land is too cold, moist, and heavy, and the other too light and dry; and, to improve and meliorate these, we have some dung hot and light, as sheep's, horses, pigeons, &c. and other fat and cooling, as that of oxen, dogs, &c.

There are two remarkable qualities in dung; the one is to produce a certain sensible heat, capable of bringing about great effects: the other is to fatten the soil, and render it the more fertile. The first of these is seldom found in any other dung but that of horses and mules, while newly made, and a little moist: the great effects of this are seen in the kitchen garden, where it invigorates and gives a new life to every thing, supplying the place of the sun; and to this we owe, in a manner, all the vegetable delicacies of the spring.

Besides this, horse-dung is the richest of all improvements that can be had in any quantity for poor hungry lands; yet, when either too new, or when used alone, it is very prejudicial to some lands; and, if spread too thin on dry lands in summer, it becomes of very little service, the sun soon exhaling all its richness, and leaving it little more than a heap of stubble or dry thatch: and, though too much of it can hardly be used in the kitchen-garden among colliflowers, cabbages, and the like: yet it is easy to over-dung land intended for corn, and gives rise by that means to a very fatal quantity of weeds.

Horse-dung is always best for cold lands, and cow-dung for hot ones; but being mixed together, they make a very good manure for most sorts of soils, and for some they are very properly mixed with mud.

Sheep's-dung and deer's-dung differ very little in their quality, and are esteem-

ed by some the best of all dung for cold clays.

Hog's-dung is by many recommended as the fattest and richest of all dung; and is found, on experience, to be better than any other kind, for fruit-trees, apples, pears, and the like: it is also a very rich dung for grass; and is said to do as much good in one load, as any other dung whatever in two.

The dung of pigeons, hens, and geese, are great improvers of meadow and corn land. That of pigeons is unquestionably the richest that can be laid on corn land; but, before it is used, it ought to be exposed for some time out of the dove-house to the open air, to take off its fiery heat. It is in general very proper for cold clay lands, but then it always should be well dried before it is laid on, because it is apt to clod in the wet. It is best also to mix it with some dry earth to break its parts, that it may be spread the more regularly; and it is in itself so very rich and hot, as to bear such an admixture, without greatly impoverishing it.

The dung of poultry, being hot and full of salts, tends much to facilitate vegetation, and is abundantly quicker in its operation than the dung of animals which feed on the leaves of plants. But for all stubborn clayey soils, there is no manure so good as the cleansing of London streets; the parts of tough land will be more expeditiously separated by this, than by any other compost.

DUNGEON, or **DONJON**, in fortification, a large tower or redoubt of a fortress, whither the garrison may retreat, in case of necessity, and capitulate with greater advantage.

DUNG-MEERS, in husbandry, places where soils and dungs are mixed and digested together: for this purpose it is usual to dig a pit sufficient to hold the stock of soil the husbandman is capable of making; and to prepare it at the bottom with stone and clay, that it may hold water, or the moisture of the dung; and besides, it should be so situated that the sinks and drips of the houses and barns may run into it. Into this pit they cast refuse fodder, litter, dung, weeds, &c. where they lie and rot together, till the farmers have occasion for it.

DUNKIRK, a port town of French Flanders, seated in a sandy soil. At first it was only a hamlet, consisting of a few fishermen's houses. But it increased by degrees and had a castle in 1322, which was demolished.

D U N

molished by the rebels in Flanders, but was rebuilt, and afterwards demolished. At length Charles V. emperor of Germany, built a castle there for the defence of the port, in 1538. This likewise was entirely demolished, except a tower, still to be seen. Then the English became masters of it, but were driven away by the French in 1558. France delivered it up to Spain by the treaty of Chateau-Cambresis. It was invested by the French in 1646, who took it after seventeen days siege. But it soon after was retaken by the Spaniards. In 1658, after the Spaniards were beaten by the French, this town was the first fruits of the victory, for it surrendered thirteen days after, and was put into the hands of the English, agreeable to a treaty between the two nations. In 1662, the French bought it of King Charles II. and have kept it ever since. In 1664 the French king began to repair the castle, and employed thirty thousand men about it. In which time they levelled several hills which commanded the place, the citadel was finished, fort Lewis was erected, and a bank of sand was cut through a thousand yards in length, which stopped up the port, and a canal was cut, which would admit a man of war of 60 guns. It was formed by two moles of timber-work, of two thousand yards in length, and about eighty yards distant from each other. At the head of these moles two wooden castles were erected, the one called Chateau Verd, the Green castle: the other Chateau de bonne Esperance, the castle of Good Hope. Afterwards 2 forts of stone work were erected near the city, which communicated by means of a wooden bridge. After this there were other forts erected at different distances; and a bason was cut, which would contain several men of war, and other ships. Then there were other fortifications added both on the sea and the land side; and a new suburb was built for a place for seamen to lodge in, with magnificent barracks, a sea arsenal, and several other buildings.

The streets of Dunkirk are wide, strait, and well paved: the houses are almost all of brick, and very high. St. John's church is the principal, the choir of which is large and well adorned. It hath fifteen chapels, of which that of St. George is remarkable for an excellent painting of that saint. The Jesuits church in Notre Dame street is a fine structure. There are several convents for monks and nuns, and a square with fine houses on all sides. By the treaty of Utrecht the fortifications

D U P

were demolished, and the port destroyed; which has greatly decreased the number of the inhabitants. It is fifteen miles north-east of Gravelines, twenty five north-east of Calais, fifty east of Dover, and one hundred fifty-five north of Paris. Long. 2. 27. E. Lat. 51. 2. N.

DUO, or **DUET**, in music, a song or composition to be performed in two parts only; one sung, and the other played on an instrument, or by two voices alone: it is also called a duo, when two voices sing different parts, accompanied with a third, which is a thorough bass. Unisons and octaves must be rarely used in duo's, except at the beginning and end.

DUODENUM. in anatomy, the first of the small intestines, so called because it is about twelve fingers breadth in length. It is very observable, that there is not any animal but what has this flexure of the intestine, or little succedaneous stomach; and that no animal is without the bilious juice, which is generated in the liver, and poured copiously into the duodenum; which manifestly proves, that nature has exerted her utmost skill in fashioning this part of the body, so necessary for the preservation of the life and health of animals.

DUPLE Ratio, in mathematics, is when any number or quantity contains another twice, as 6 is in a duple ratio to 3.

Sub-DUPLE Ratio, in mathematics, is when any number or quantity is contained in another twice; thus 3 is said to be sub-duple to 6.

DUPLICATE Ratio, is a ratio compounded of two ratios; as the duplicate ratio of a to b is the ratio of $a a$ to $b b$, or the square of a to the square of b .

In a series of geometrical proportionals, the first term to the third is said to be a duplicate ratio of the first to the second: Thus, in 2, 4, 8, 16, the ratio of 2 to 8 is duplicate of that of 2 to 4; so that duplicate ratio is the proportion of squares, as triplicate is of cubes, &c. and the ratio of 2 to 8 is said to be compounded of that of 2 to 4, and of 4 to 8.

DUPLICATION, the doubling of any thing, or multiplying of it by 2: also the folding of any thing back again on itself.

DUPLICATION of the Cube, is to find the side of a cube that shall be double in solidity to a given cube, which is a famous problem cultivated by the geometers these two thousand years. It was first proposed by the oracle of Apollo at Delphos; which, being consulted about the

the manner of stopping a plague then raging at Athens, returned for answer, that the plague should cease when Apollo's altar, which was cubical, should be doubled. Upon this, they applied themselves, in good earnest, to seek the duplicature of the cube, which hence-forward was called the Delian problem.

The solution of this problem depends upon finding two mean proportionals between two given lines: for if the side of a given cube be $=a$, and the side of a double cube be $=y$, then will $2a^3=y^3$; or putting $b=2a$, it will $aab=y^3$; therefore it will be $aa:yy::y:b$; or, making $z=\frac{yy}{a}$, it will be $a:z::y:b$;

so that these four quantities will be continual proportionals: consequently y , the side of the cube sought, is the second of two mean proportionals between a and b .

DUPLICATURE, among anatomists, the doubling of any membranes, when they run off to some distance, and return again.

DURA MATER, in anatomy, one of the membranes, or meninges, which surround the brain.

DURATION, an idea which we get by reflecting on that train of ideas which constantly follow one another in our minds, as long as we are awake. The simple modes of duration are any different lengths of it whereof we have distinct ideas, as hours, days, years, time, eternity, &c. See the article *Time*.

* **DURHAM**, bishopric of, a county palatine, in the North of England. It is thirty-nine miles long, and thirty-five broad. The air here are sharp, and it is observed to be colder in the west than the east parts. In general the bishopric is thick set with towns, and very rich in mines of coals. This country has about sixteen rivers, the principal of which are the Tees, the Were, &c. Most of these abound with fish, particularly salmon; and they form considerable ports, well frequented by colliers of the greatest burthen, which are a nursery for sailors for the royal navy.

* **DURHAM**, city of, the capital of the county palatine of Durham, in the North of England, is situated on a rising ground, and surrounded with the river Were, over which are two large stone bridges. The city is walled round, and defended by a specious and strong castle. There are six parish churches, be-

sides a handsome cathedral, dedicated to St. Cuthbert. It is the see of a bishopric; who is a temporal as well as spiritual lord in it, though king Henry the eighth greatly abridged the temporalities. Durham is one of the best bishoprics in England, and the prebends, and other church-livings are very rich. The market here is on Saturday, where provisions, &c. are very cheap and very good. It lies 16 miles from Newcastle, and 257 North by East of London.

* **DURHAM**, battle of, October 17, 1346. David Brus, in the month of October, entered England, at the head of fifty thousand men, took Liddel by assault, and put the garrison to the sword, exacted heavy contributions from the monks and church of Durham, levied a capitation tax from all persons without distinction, ravaged the country; and committed numberless barbarities. The queen consort was no sooner informed of this invasion than she set out for the North, to encourage the lords of the Marches to do their duty; and in a little time a considerable army was assembled at York, from whence it advanced in four divisions against the enemy, who encamped in Bear-park, at the distance of three miles from Durham. The first body was commanded by the lord Henry Percy, accompanied by the earl of Angus, the bishop of Durham, and several other noblemen of the North; the archbishop of York conducted the second division, having under his command the bishop of Carlisle, and the lord Nevil; the third body was led by the bishop of Lincoln, the lord Mowbray, and sir Thomas Rokeby; and the rear was brought up by Edward Baliol, attended by the archbishop of Canterbury, the lord Ross, and the sheriff of Northumberland. A great number of young noblemen and persons of distinction, served as volunteers on this occasion, partly to express their zeal and loyalty in the king's absence, and partly to distinguish themselves under the eye of the queen, who took the field in person. The army consisted chiefly of stout borderers, inured to war and hardship, reinforced by a body of veterans whom Edward had sent over from France, and the whole, when they began their march, amounted to sixteen thousand men; but, in all probability the number was considerably increased, before they came in sight of the enemy, as so many noblemen must have been attended by a great concourse of vassals, in an expedition upon which the

the fate of the whole kingdom in a great measure depended. David Brus, apprized of their approach, detached a body of horse, under Douglas and sir David Graham, to observe their motions, and harass them in their march; but they were so roughly handled by the English archers, that they soon turned their backs, though very few of them escaped, with their leaders; and this advantage the English deemed a happy omen of success. The Scottish army was formed into one line: the High-steward of Scotland, and the earl of March commanding on the right; the earls of Murray and Douglas being on the left wing; and David, with some French auxiliaries, and the flower of his nobility, being stationed in the center. The English archers began the battle with showers of arrows on the left, which galled the Scots under the High-steward in such a manner, that he ordered his division to charge sword in hand, and actually broke the bow-men, who falling back upon the division commanded by lord Percy, occasioned great disorder and confusion. The enemy still pressed on with incredible impetuosity, and victory had almost declared in their favour, when Baliol coming up, with four thousand choice horse at a round trot, fell upon the flank of the Scots, who had advanced beyond the rest of their line, and not only sustained the archers, who had given way, but also cut off the communication between the High-steward, and the main body where Brus commanded. Thus intercepted, and in great danger of being surrounded, he retreated in good order, while Baliol and the whole force of that wing attacked the centre of the Scots, now left exposed by the retreat of the left wing. Here the battle was maintained with great fury on both sides for a considerable time; at length the main body of the Scots gave way: then David refusing to quit the field, his nobles threw themselves into a circular form, and defended him with great gallantry, he himself fighting hand to hand with his enemies, until his followers were surrounded and partly slain; and David received two arrows in his body. Even when he was ready to sink with the loss of blood, he disdained to ask for quarter; nor would he receive it but at the hands of a gentleman. At last he was made prisoner by John Coupland; after he had struck out two of that gentleman's teeth with his gauntlet. The left wing still continued to maintain their ground, under

the command of Douglas and Murray, till this last was slain; and Douglas taken after almost all his men had been cut in pieces. This victory would have decided the fate of Scotland; had not the High-steward retired in good order, and been joined by the fugitives from the battle, so as to form a body which the victors did not think proper to pursue. Nevertheless, they left fifteen thousand men lying dead upon the spot, and among those sir Thomas Charteries, chancellor of Scotland, the lord Chamberlain, Edward Keith, earl Marechal, the earls of Murray and Strathorne, with several other noblemen, and a great number of persons of distinction. The earls of Fife, Monteith, Sutherland, Wigton and Carrick, William lord Douglas, and many other personages of note, were among the prisoners. The king was conveyed by Coupland to Ogle-castle in Northumberland, of which he was governor; and when the queen had dispatched a pursuivant with orders to bring him to Durham, he refused to deliver up his prisoner, because in those days the ransom belonged to the captor. He thought proper, however, to consign David Brus to his friend the lord Nevil, and take shipping immediately for Calais, where he communicated the whole transaction to the king, who approved of his conduct, created him a knight baronet, and bestowed upon him a pension of five hundred pounds, until the same value in lands adjoining to his estate could be settled on him and his heirs for ever; he was ordered however to obey the commands of the queen, who arrived in person at the camp, before Calais, after having provided for the safety of the kingdom, and left the care of the North to the lords Percy and Nevil, who took Hermitage-castle, and ravaged the whole county of Lothian. Coupland returning to England, delivered the Scottish king to the Sheriffs of Yorkshire, who conveyed him to the Tower of London. John Graham earl of Monteith, and Duncan earl of Fife, having formerly sworn fealty to the king of England, and taking the oath to Edward Baliol as their immediate sovereign, were without any trial condemned as traitors; to be drawn, hanged and beheaded. This sentence was pronounced by the king and his council at Calais, and executed upon the earl of Monteith; but Duncan was respited till further orders, because he happened to be allied to his majesty.

D Y E

DUTCHY, in geography, an appellation given to the dominions of a duke. See *Duke*.

DUTCHY-COURT, a court of the dutchy-chamber of Lancaster, held at Westminster, before the chancellor of the same, for matters concerning the lands and franchises of that dutchy.

DUTY, in general, any thing that one is obliged to perform.

DUTY; in polity and commerce, the impost laid on merchandizes, at importation or exportation, commonly called the duties of customs; also the taxes of excise, stamp-duties, &c.

DUTY, in the military art; the exercises of those functions that belong to a soldier.

DYE, in architecture, any square body, as the trunk, or notched part of a pedestal: or it is the middle of the pedestal, or that part included between the base and the cornice, so called because it is often made in the form of a cube or dye.

DYEING, the art of giving a lasting colour to silks, cloths, and other substances, whereby their beauty is much improved, and value enhanced.

Ingredients used in dyeing. These are best reduced under two heads: colorata, or those which properly give the colour: and non-colorata, used to prepare the stuffs for better taking the dye, and to heighten the lustre of the colours.

The colouring ingredients are of three sorts, blue, yellow, and red. To the first sort belong indigo, woad, weld, wood-wax, and log-wood; to the second, fustic; to the third, madder, brazil, cochineal, kermes, safflower, and sanders. To which may be added annatto, and young fustic, for orange-colours: lastly, wood-foot. See *colour*.

The art of dying is indebted, for many of its valuable colours, to the vegetable kingdom; and may be much more so, if the world would be at the pains of enquiring into the properties of the plants that grow about the fields.

The matter of the stuff to be dyed makes it necessary to change the liquor in which it is boiled, or to vary the ingredients; and the greatest naturalists, without a mechanical knowledge of dyeing, would be amazed to see, that if a skain of white wool, and another of white cotton, be plunged together into the scarlet dye, and this even after they have both received the same previous boiling and preparation, the skain of cotton would come out of

D Y E

the liquor as white as it was put in, while the wool comes out tinged of a beautiful fire-colour. The dyer however sees this every day without an admiration of the cause, and never troubling his thoughts about how it is done. He uses it daily, to dye any thing woollen to a scarlet-colour, leaving a part white: in order to which, he knows, there requires no more than that the part to be left white, should be of cotton.

Experience shews, that all colours do not attach themselves with equal readiness to the stuff, or remain equally firmly united to it. Woad, indigo, cochineal, kermes, and many other colours, never reach farther than the surface of the stuff. The liquor of the dye penetrates indeed perfectly through the body of it, but the colouring particles stopping at the surface become entangled there, and never penetrate, at least not in any great quantity, to the central part, which remains either quite white, or only very slightly tinged. This however only happens to such stuffs as are thick, and of a very close texture: others are coloured throughout. And this is only the case in regard to some dyes, not to all sorts, since most of the wood colours penetrate wholly through the stuff, be it ever so thick, and colour it equally every where. Whence it seems probable, that the colouring particles of the woods are either more minute and fine, or much more intimately blended with the water, than those of cochineal, indigo, and such others as do not penetrate beyond the surface.

The difference between the wool and the cotton, the one receiving, and the other not receiving at all the coloured particles in its natural state, or with the same impregnation by means of which the other does, seems resolvable thus, that though the attraction in wool be much greater in regard to the coloured particles than that of the water, and therefore it robs the water of them; yet the attraction in cotton being less than in water, the colouring particles remain in the water without any tendency to attach themselves to the cotton.

In dyeing, the ingredients used for the colours are well known to be of very different kinds. Some of them are such as communicate a colour, which will a long time resist the injuries of the air, and these are therefore called the good or stand-colours; and there are others which the bare exposition to the air will destroy or deface

D Y E

deface in a very little time; these are therefore called the false or fading colours.

There is a shorter way of trying the permanence of many colours, than that of exposing them to the air, since in boiling only five minutes in a pint of water, in which there has been dissolved half an ounce of alum, they will lose as much colour as they would have done by being exposed two days to the air in summer. Some colours require different methods of trial, but this serves for almost all. The shades of blue, yellow, red and green, purple and green, are the finest colours to make these experiments upon, as the same previous preparation or impregnation of the stuff serves for both, and both depend upon blue for their basis, the purple being made of blue and red, and the green of blue and yellow.

It should not seem surprising, if the stuff be first dipped into a dye of a standing blue, and afterwards into a fading red or yellow, to turn it green or purple, that the action of the air, or boiling in alum water, should carry off those false colours, which had only been applied to the stuff, after it was before saturated with a standing colour. But it might be expected, that when the stuff was first impregnated with them, and afterwards had the blue added upon them, that either the blue must be the colour that went off, or that they must all remain: but, in effect, nothing of this difference is found, but the blue remains, while the fading colours go off, however, or in whatever manner or order, they are applied. *Mem. Acad. Scienc. Par. 1737.*

The non-colouring ingredients are,—Certain restraining or binding materials, as, galls, sumac, alder bark, pomegranate peel, walnut rinds and roots, sapling bark, —and crab-tree bark.—Certain salts, as alum, argol, saltpetre, sal ammoniac, pot-ashes, lime, and urine,—Liquors, as well water, river-water, aqua-vitæ, vinegar, lemon-juice, aqua-fortis, honey, and mellasses.—Gums, as tragacanth, arabic, mastic, and sanguis draconis.—Smectics, or abstersives; as sope, fuller's-earth, linseed-oil, ox-gall, &c.—Metals, as steel-filings, tin, slippe, and pewter, to which add copperas, verdigrise, antimony, litharge, and arsenic.—Lastly, bran, wheat-flour, yolks of eggs, leaven, cummin seed, fenugreek-feed, agaric, and fenna.

Most of the ingredients some account may be found under their respective articles in the course of this work.

D Y E

For the colouring ingredients, *colorantia colorata*, we have, 1. Iron and steel, or what is made from them, which we have observed are used in dyeing blacks; though how they contribute thereto is not so obvious: we know that green oaken boards become black, by the friction of the saw; a green sour apple, cut with a knife, turns of the same colour; the white grease, wherewith the wheels of coaches are anointed, becomes likewise black, by means of the iron boxes wherewith the nave is lined, and the friction between the nave and the axle-tree; and that an oaken stick becomes black by a violent friction against other wood in a turning lathe; and the black colour on earthen-ware is given with scalings of iron vitrified. From all which it seems to follow, that the business or blacking lies in the iron, and particularly in its ustulation or friction. Be this at it will, copperas, the most useful ingredient for dying black, is the salt of the pyrites wherewith old iron is incorporated: and, wherever this is used, some of the astringents are to accompany it. 2. Red-wood chopped, and ground in a mill, is used for dyeing cloth, rugs, &c. of the coarser sort. Its tincture, which is a sort of brick-colour, is got out by long boiling it in galls, and the cloth along with it. It stands better than brazil. 3. Brazil, chopped also, and ground, dyes a pink colour, or carnation, nearest approaching cochineal: it is used with alum; with pot ashes it also serves for purples. It easily stains. 4. Madder gives a colour near approaching the Bow-dye, or new scarlet: those called bastard scarlets are dyed with it. It endures much boiling, and is used both with alum and argol, and holds well: the brightest dyes with madder are made by over-dyeing the stuff, and then discharging part of it by back-boiling in argol. It is used with bran water instead of white liquor. 5. Cochineal, used with bran-liquor in a pewter furnace, with aqua-fortis, gives the dye called among us, though improperly, scarlet in grain. Any acid takes off the intense redness of this colour, and turns it towards an orange, or flame colour. With this colour the Spanish leather and wool, used by ladies are dyed. 6. Annatto gives an orange-colour, especially to silks, linens, and cottons; for it does not penetrate cloth: it is used with pot-ashes. 7. Weld, by the help of pot-ashes, yields a deep lemon colour, though it is used to give all sorts of yellows. 8. Wood-wax,

D Y E

a green wood, called also *genista tinctoria*, and the dyer's-weed, has the like effect as weld, though its use is chiefly confined to coarse cloths. It is set with pot-ashes, or urine. 9. Fustic is of two sorts, young and old: the former, chopped and ground, yields a kind of reddish orange colour; the latter a colour distant several degrees of yellow from the former. It spends with or without salts, works either hot or cold, and holds firm. 10. Wood-foot, containing not only a colour, but a salt, needs nothing to extract its dye, or make it strike on the stuff. The natural colour it yields is that of honey, but it is the foundation of many other colours on wool, and cloth only. 11. Woad ground, or bruised with a mill for the purpose, is made up into balls, which being broken, and strewed on lime or urine, is used with pot-ashes or sea-weed, and gives a lasting blue. The lime, or cork, accelerates the fermentation of the woad, which in three or four days will work like a guile of beer, and be covered with a greenish froth or flower. An intense woad colour is almost black, that is, is of a damson-colour. It is the foundation of so many colours, in its different degrees or shades, that the dyers have a scale whereby to compute the lightness and depth of this colour. 12. Indigo is of the like nature, and used for the same purpose as woad, only it is stronger. 13. Log-wood, chopped and ground, yields a purplish blue: it may be used with alum: formerly it was of ill repute, as a most false and fading colour; but since it has been used with galls, it is less complained of. The dyeing materials are generally applied in decoctions made in water, more or less strong, according to the occasion; sometimes by only dipping the stuff in the vat of dye; sometimes leaving it a day or more to steep. For the alum, in dyeing silks, is always applied cold, in which state alone it contributes to the brightness of the dye.

The art of dyeing may be divided into as many branches as there are different colours to be communicated, and sorts of different stuffs to be subjects of it.

DYEING of cloths, serges, druggets, and other woollen manufactures. For black, in cloths and stuffs of price, it is begun with a strong decoction of woad and indigo, which give a deep blue; after which, the stuffs, being boiled with alum and tartar, or pot-ashes, are to be madder with common madder; then dyed black with Aleppo galls, copperas, and

D Y E

sumac; and finished by back-boiling in weld. Scarlet is dyed with kermes and cochineal, with which may also be used agaric and arsenic. Crimson scarlet is given with cochineal-mestich, aqua-fortis, sal ammoniac, sublimate, and spirit of wine. Violet, scarlet, purple, amaranth, and pansy-scarlet, are given with woad, cochineal, indigo, braziletto, brazil, and orchil. For common reds, pure madder is used, without other ingredients. Crimson-reds, carnations, flame and peach colours, are dyed, according to their several hues, with cochineal-mestich, without madder, or the like. Crimson-red is prepared with Roman alum, and finished with cochineal. Peach-colour must be back-boiled a little with galls and copperas, or the like. Orange aurora or golden yellow, brick colour, and onion-peel colour, are given with woad and madder, tempered according to their respective shades. For blues, the dark are given with strong tincture of woad: the brighter with the same liquor, as it weakens in working. Dark browns, minims, and tan-colours, are given with woad, weaker in decoction than for black, with alum and pot-ashes; after which they are madder higher than black: for tan-colours, a little cochineal is added. Pearl-colours are given with galls and copperas; some are begun with walnut-tree roots, and finished with the former; though, to make them more serviceable, they dip them in a weak tincture of cochineal. Greens are begun with woad, and finished with weld. Pale-yellows, lemon-colours, and sulphur-colours, are given with weld only. Olive colours of all degrees are first put in green, and taken down again with foot, more or less, according to the shade required. Feulemort, hair-colour, musk, and cinnamon-colour, are given with weld and madder. Nacarat, or bright orange-red, is given with weld and goats hair, boiled with pot-ashes. Fustic here is forbid, as a false colour.

DYEING of Wools for Tapestry is performed after the same manner as cloths, excepting blacks, which are only to be woaded, and then put in black as above.

Black wools for cloths and serges may be begun with walnut-tree root, and walnut rinds, and finished by dipping in a vat of black.

DYEING of Silks is begun by boiling them with soap, &c. then scowering and washing them out in the river, and steeping them in alum-water cold. For crim-

D Y E

son they scour them a second time before putting them in the cochineal vat.

Red-crimson is dyed with pure cochineal-mestich, adding galls, turmeric, arsenic, and tartar, all put together in a copper of fair water almost boiling: with these the silk is to be boiled an hour and a half; after which, it is suffered to stand in the liquor till next day. Violet-crimson is also given with pure cochineal, arsenic, tartar, and galls; but the galls in less proportion than in the former: when taken out, it is to be well washed, and put in a vat of indigo. Cinnamon-crimson is begun like the violet, but finished by back-boiling, if too bright, with copperas; if dark, with a dip in indigo. Light-blues are given in a vat of indigo. Sky-blues are begun with orchil, and finished with indigo: for citron-colours, the silk is first alumed, then welded with a little indigo. Pale-yellows, after aluming, are dyed in weld alone. Pale and brown auroras, after aluming, are welded strongly; then taken down with rocou dissolved with pot-ashes. Flame-colour is begun with rocou, then alumed; and dipped in a vat or two of brazil. Carnation, and rose-colours, are first alumed, then dipped in brazil. Cinnamon-colour, after aluming, is dipped in brazil and braziletto. Lead-colour is given with fustic, or with weld, braziletto, galls, and copperas. But the galls, on these and other occasions, are not to be used, because they increase the weight to the damage of the purchaser; for which reason, it is punished in France as a fraud: in reality, few but black silks need galls.

Black silks, of the coarser sort, are begun by scouring them with sope, as for other colours; which done, they are washed out, wrung, and boiled an hour in old galls, where they are left to stand a day or two; after which they are washed again with fair water, wrung, and put in another vat of new and fine galls; then washed and wrung again, and finished in a vat of black. Fine black silks are only put once into galls, viz. the new and fine sort, which has only boiled an hour; then they are washed, and wrung out, and dipped thrice in black, to be afterwards brought down by back-boiling with sope.

DYEING of Thread is begun with scouring it in lye of good ashes; after which it is wrung, rinsed out in river water, and wrung again. For a bright blue, it is given with braziletto and indi-

D Y E

go. Bright-green is first dyed blue, then back-boiled with braziletto and verdeter, and lastly woaded. For a dark-green it is given like the former, only darkened more before woading. Lemon, or pale yellow, is given with weld, mixed with rocou. Orange and isabella, with fustic, weld, and rocou. Red, both bright and dark, with flame-colour, &c. are given with brazil, either alone, or with a mixture of rocou. Violet, dry-rose, and amaranth, are given with brazil, taken down with indigo. Feulemort, and olive colour, are given with galls and copperas, taken down with weld, rocou, or fustic. Black is given with galls and copperas, taken down and finished with braziletto wood.

DYEING of Hats is done with braziletto, galls, copperas, verdigrise, dissolved and boiled in a copper capable of receiving, besides the liquor, twelve dozen of hats on their blocks or moulds. Here the hats are suffered to boil some time, after which they are taken out, and suffered to stand and cool; then dipped again; and thus alternately, oftener or seldomer, as the stuff is of a nature to take the dye with more or less difficulty.

Theory of DYEING.—We shall make some general deductions, we may throw a little necessary light on the theory of dyeing. As, 1. That all the materials, which of themselves give colour, are either red, yellow, or blue; so that out of them, and the primitive fundamental colour, white, all that great variety, which we see in dyed stuffs, arises. 2. That few of the colouring materials (as cochineal, foot, wood-wax, or woad) are, in their outward and first appearance, of the same colour, which, by the slightest solutions in the weakest menstrua, they dye upon cloth, silk, &c. 3. That many of the colouring materials will not yield their colours without much grinding, steeping, boiling, fermenting, or corrosion by powerful menstrua, as red-wood, weld, woad, anatto, &c. 4. That many of the said colouring materials will of themselves give no colouring at all, as copperas, or galls, or with much disadvantage, unless the cloth, or other stuff to be dyed, be first covered or incrustated, as it were, with some other matter, though colourless, aforehand; as madder, weld, and brazil, with alum. 5. That some of the colouring materials, by the help of other colourless ones, strike different colours from what they would alone, and of themselves;

D Y E

selves ; as cochineal and brazil. 6. That some colours, as madder, indigo, and woad, by reiterated tinctures, will at last become black. 7. That though green be the most frequent and common of natural colours, yet there is no simple ingredient, which is now used alone, to dye green with upon any material ; sap-green, the condensed juice of the rhamnus berry, being the nearest ; and this only used by country people. 8. There is no black thing in use which dyes black ; though both the coal and foot of most things burnt, or scorched, be of that colour ; and the blacker, by how much the matter, before it was burnt, was whiter, as in the famous instance of ivory black. 9. The tincture of some dyeing stuffs will fade even with lying, or with the air, or will stain even with water ; but very much with wine, vinegar, urine, &c. 10. Some of the dyers materials are used to bind and strengthen a colour ; some to brighten it ; some to give a lustre to the stuff ; some to discharge and take off the colour, either in whole, or in part ; and some, out of fraud, to make the material dyed, if costly, to be heavier. 11. Some dyeing ingredients, or drugs, by the coarseness of their bodies, make the thread of the dyed stuff seem coarser ; and some by shrinking them smaller ; and some by levigating their asperities, finer. 12. Many of the same colours are dyed upon different stuffs with different materials ; as red-wood used in cloth, not in silks ; anatto in silk, not in cloth ; so that they may be dyed at several prices. 13. Scowering, and washing of stuffs to be dyed, is to be done with appropriate materials ; as sometimes with ox-galls, sometimes with fuller's earth, sometimes with soap ; this latter being pernicious in some cases, where pot-ashes will stain or alter the colour. 14. Where great quantities of stuffs are to be dyed together, or where they are to be done with great speed, and where the pieces are very long, broad, thick, &c. they are to be differently handled, both in respect to the vessels and ingredients. 15. In some colours and stuffs the tingent liquor must be boiling ; in other cases bloodwarm, in some it may be cold. 16. Some tingent liquors are fitted for use by long keeping ; and in some the virtue wears away by the same. 17. Some colours, or stuffs, are best dyed by reiterated dippings over into the same liquor at several intervals of time, and some by continuing longer, and

D Y E

others lesser whiles therein. 18. In some cases, the matter of the vessel wherein the liquors are heated, and the tinctures prepared, must be regarded ; as that the kettles be pewter for Bow-dye. 19. Little regard is had how much liquor is used in proportion to the dyeing drugs ; the liquor being adjusted to the bulk of the stuff, as the vessels are to the breadth of the same ; the quantity of dyeing being proportioned to the colour higher or lower, and to the stuffs both ; as likewise the salts are to the dyeing drugs.

Concerning the weight which colours give to silks, for in them it is most taken notice of, as being sold by weight, and being a commodity of great price ; it is observed that one pound of raw silk loses four ounces by washing out the gums and naturalordes. That the same scowered silk may be raised to above thirty ounces from the remaining twelve, if it be dyed black, with certain materials.

DYEING of Leather, Skins, &c.—Blue is given by steeping the subject a day in urine and indigo, then boiling it with alum : or it may be given by tempering the indigo with red-wine, and washing the skins therewith. Red is given by washing the skins, and laying them two hours in galls, then wringing them out, dipping them in a liquor made with lignustrum, alum, and verdigrise in water ; and lastly, in a dye made of brazil wood, boiled with ley. Purple is given by wetting the skins with a solution of roche alum in warm water, and, when dry again, rubbing them with the hand with a decoction of logwood in colder. Green is given by smearing the skin with sap-green and alum-water boiled : to darken the colour, a little more indigo may be added. Dark-green is also given with steel filings and sal ammoniac steeped in urine till soft, then smeared over the skin ; which is to be dried in the shade. Sky-colour is given with indigo steeped in boiling water, and the next morning warmed and smeared over the skin. Yellow, by smearing the skin over with aloes and linseed oil, dissolved and strained : or by infusing it in weld. Orange-colour is given by smearing with fustic berries boiled in alum water : or, for a deep orange, with turmeric.

DYEING, or STAINING, of Wood for inlaying, veneering, &c.—Red is done by boiling the wood in water and alum ; then taking it out, adding brazil to the liquor, and giving the wood another boil

D Y E

in it. Black, by brushing it over with log-wood boiled in vinegar, hot; then washing it over with a decoction of galls and copperas, till it be of the hue required. Any other colour may be given by squeezing out the moisture of horse-dung through a sieve, mixing it with dissolved roche alum and gum-arabic; and to the whole adding green, blue, or any other colour designed: after standing two or three days, pear-tree, or other wood, cut to the thickness of half a crown, is put into the liquor boiling hot, and suffered to remain till it be sufficiently coloured.

DYEING of Bone, Horn, or Ivory.—Black is performed by steeping brass in aqua-fortis till it be turned green: with this the bone, &c. it is to be washed once or twice: then put in a warmed decoction of logwood and water. Green is begun by boiling the bone, &c. in alum-water; then with verdigrise, sal ammoniac, and white wine vinegar; keeping it hot therein till sufficiently green. Red is begun by boiling it in alum-water, and finished by decoction in a liquor compounded of quick-lime steeped in rain-water, strained, and to every pint an ounce of brazil-wood added. In this decoction the bone, &c. is to be boiled till sufficiently red.

DYEING, or STAINING Horn to imitate Tortoise-Shell.—The horn to be dyed must be first pressed into proper plates, scales, or flat form; and the following mixture prepared.

“Take of quick-lime two parts, and of litharge one part; temper them together to the consistence of a soft paste with sope-lye.” Put this paste over all the parts of the horn, except such as are proper to be left transparent, in order to give it a nearer resemblance of the tortoise-shell. The horn must remain in this manner covered with the paste till it be thoroughly dry; when the paste being brushed off, the horn will be found partly opaque and partly transparent, in the manner of tortoise-shell; and when put over a foil, of the kind of latten, called assidue, will be scarcely distinguishable from it. It requires some degree of fancy and judgment to dispose of the paste in such a manner as to form a variety of transparent parts, of different magnitudes and figures, to look like the effect of nature; and it will be an improvement to add semi-transparent parts: which may be done by mixing whiting with some of the paste to weaken its operation in particular places; by which spots of a

D Y S

reddish brown will be produced, which, if properly interspersed, especially on the edges of the dark parts, will greatly increase both the beauty of the work, and its similitude with the real tortoise-shell.

DYSCRACY, among physicians, ill habit or state of the humours, as in the scurvy, jaundice, &c.

DYSENTERY, in medicine, an ulceration of the intestines, attended in the beginning with an excretion of a biting, bilious humour, afterwards with abrasions of the intestines, and, at last, blood in moderate quantities is voided.

When this disease is attended with a bloody flux and severe gripes, the intestines are commonly ulcerated, and discharge blood; which comes away, sometimes with slime accompanied with fleshy particles. The patient is seized with frequent irritations to stool, and a pain of the anus; he discharges but little at a time, and his pain is increased by every stool; and as this disease arises from an inflammation, there is always some degree of fever with it.

Wherefore, to come to a cure, the first thing to be done is to draw blood: then a vomit to be given, for which ipecacuanha wine is very proper, and to be repeated two or three times every third or fourth day.

During this course, and afterward, medicines proper for stopping the flux and healing the ulcerated membranes are to be administered: and of this sort I know none better than the following bolus, composed of the cordial confection and French bole, each one scruple; Thebaic extract, one grain, given three times a day.

And it will be of service to inject clysters, either of fat broth with the addition of Venice-treacle or electuary of scordium, or of the white decoction and starch; or instead of this last, of the chalk julep, with two or three grains of the Thebaic extract, when occasion requires it. Lastly, I recommend an useful remark, that this course is sometimes rendered ineffectual by a bad habit of body. In such cases, to the foregoing method it will be proper to add medicines which correct the humours; and indeed some doses of the rhubarb with a small proportion of dulcified mercury sublimed, commonly called calomel, will prove very conducive to that end.

Besides these diseases, a vomica, or internal suppuration, is sometimes formed in the stomach. This indeed seldom happens,

D Y S

pens, but yet I have observed it more than once, when the patient vomited up a mixture of blood and purulent matter in large quantities.

The case is terrifying indeed; but yet, generally speaking, it is not attended with any great danger; and it is cured by medicines which heal the ulcerated membranes, especially Locatelli's balsam. *Mead's Monita et Præcepta.*

DYSOREXY, among physicians; a want of appetite, proceeding from a weakly stomach. See *Appetite*.

DYSPEPSY, in physic; a difficulty of digestion; or rather a depraved digestion, when the aliments in the stomach; for want of a proper digestion, follow their spontaneous tendency, and contract an alkaline or acid putrefaction.

DYSPNOEA, in physic; a difficulty of breathing.

D Y T

A difficulty of breathing may be caused by any thing that can affect any part of the thorax; particularly the heart, large arteries, and lungs; by crude tubercles, vomica's, polypuses, and several other disorders.

DYSURIA, in medicine; a difficulty of making urine, attended with a sensation of heat and pain.

This disease is distinguished from a stranguary, as, in the latter, the urine is voided by only a drop, as it were, at a time; but, however, with pain; and from an ischury, as in this disorder, there is an almost total suppression of urine.

DYTISCUS, water beetle, in zoology; a genus of insects of the order of the coleoptera, the antennæ of which are slender and setaceous, and their feet formed for swimming.

E

E A G

E, The fifth letter of the alphabet, and the second vowel. The Letter **E** is evidently derived from the old character η in the ancient Hebrew and Phœnician alphabets, inverted by the Greeks to this position **E**. From the same origin is also derived the Saxon *e*, which is the first letter in their alphabet that differs from the Latin, one. It is formed by a narrower opening of the larynx than the letter **A**; but the other parts of the mouth are used nearly in the same manner as in that letter.

In has in most languages a long and short sound: the short sound is audible in *fed, fret, den*, and other words ending in consonants; its long sound is produced by a final *e*, as in *here, hire, scene, revere, &c.* as also in some others by coming after *i*, as in *brief, chief, grief, &c.* and sometimes this long sound is expressed by *ee*, as in *feed, freed, beer, creed, &c.*

EAGLE, *Aquila*, in ornithology, the name of several species of the falcon kind. In heraldry, the eagle is accounted one of the most noble bearing in armoury, and ought to be given only to such as greatly excel in the virtues of generosity and courage, or for having done singular services to their sovereigns; in which cases they

E A G

may be allowed a whole eagle, or an eagle naissant, or only the head or other parts thereof, agreeable to their exploits. Among the ancients, the eagle was held sacred to Jupiter, and therefore placed on his scepter. The Romans had the greatest respect for it, looking upon it as the talisman of their state, and taking it for their principal ensign. It was either of gold or silver, borne single on the point of a pike, till the time of Constantine, when the empire being divided into the eastern and western, the eagle was afterwards represented with two heads.

EAGLE-STONE, *Ætites*. See *Ætites*.

Black EAGLE, an order of knighthood, instituted by the elector of Brandenburg, in 1701, on his being crowned king of Prussia. The knights of this order wear an orange-coloured ribbon, suspending a black eagle.

White EAGLE, an order of knighthood in Poland, instituted in 1325, by Uladislav V. on occasion of the marriage of his son Casimir to the daughter of the great duke of Lithuania. The knights of this order wear a chain of gold, suspending a silver eagle, crowned.

EAGLET, a diminutive of eagle properly signifying a young eagle. In heraldry,

E A R

dry, when several eagles on the same escutcheon, they are termed eaglets.

E A R, *Auris*, in anatomy, the organ of hearing. Anatomists distinguish the ear into external and internal; the greatest part of the external ear consists of a large cartilage, which is the basis of all the other parts. There are two portions, the one large and solid, called pinna, which is the superior part; the other small and soft, called the lobe, which makes the lower part. We may likewise consider two sides in the outward ear, one turned obliquely forward, and irregularly concave; the other turned obliquely backward, and unequally convex; the fore-side is divided into four eminences and as many cavities; the first eminence is the helix, which is a large folded border, or circumference of the great portion of the ear: the second is the anthelix, which is the large oblong eminence surrounded by the helix: the third is the tragus, which is the small anterior protuberance below the anterior extremity of the helix; the fourth is the antitragus, which is the posterior tubercle below the inferior extremity of the anthelix. The first cavity is the hollow of the helix; the second is the depression at the superior extremity of the anthelix, called fossa navicularis: the third is the concha, or great double cavity, that lies under the anthelix, the upper bottom of which is divided from the lower by a continuation of the helix, like a transverse crista; and, lastly, the meatus of the external ear at the bottom of the concha.

The internal ear consists chiefly of several bony, pieces viz. the external meatus auditorius; the tympanum, or barrel of the ear; the labyrinth; and the internal meatus auditorius, which may be called the immoveable or containing parts, and the moveable or contained parts, which are four little bones lodged in the tympanum, called incus, malleus, stapes, and os orbiculare, or lenticulare.

Du Verney tells us, we may justly consider the external ear as a kind of natural horn, the clean and smooth cavity of which serves to collect sounds, and consequently render their impression on the other organs of hearing stronger. Some are of opinion that the direct lines of sound, whilst insinuating themselves into the sinuses of the ear, are there several times reflected, before they reach the concha; and that these sinuses and repeated reflections serve to augment the impression. The motion of the muscles of the external ear is a mat-

E A R

ter attended with a good deal of obscurity; but yet it seems probable that the concha must, by their action, be either contracted or dilated, according to the impetus or faintness of the tremulous motions of the air. The meatus of the ear, by redoubling the reflexions, renders the vibrations more brisk; and the obliquity of its structure not only guards the membrana tympani against the injuries of the air, but is also the reason why the surface of the meatus itself is larger than it would otherwise be. That species of wax, in the cartilaginous part of the meatus retains any extraneous substances, or insect, which might possibly convey themselves into the ear, and injure the membrana tympani: but nevertheless it is often productive of great inconveniences; for, unless the ear were frequently cleansed, this viscid substance would be accumulated in too large a quantity, and at last hinder the tremulous motions of the air from reaching the membrana tympani; from which deafness very often happens.

The cartilaginous meatus, which is winding and variously interrupted, forms a certain ridge, like a tongue, before the concha. This ridge propels the reflexions more directly to the more remote and internal parts of the meatus. The nervous branches distributed upon the cartilaginous meatus render that part of so exquisite a sensation, that we instantly feel the most minute extraneous body insinuating itself into the cavity of the ear. The membrana tympani receives the various tremulous motions of the air, and, when not disordered, faithfully conveys them to the other parts of the internal ear; but it performs these functions in consequence of its being dry, thin, and diaphanous. The agitations of the membrana tympani are communicated to the malleus; the malleus conveys them to the incus, and the incus to the stapes; whose agitations at last puts the os petrosum and labyrinth into a commotion. The musculus stapedis, by drawing the basis of the stapes a little outwards, renders the pellicle, with which the superior part of this basis is covered, tense; and according as it renders it more or less so, it gives it a proportionably greater or less disposition for receiving the tremulous motions of the membrana tympani. On the sides of the tympanum are two meatuses; it is not improbable that the air contained in the tympanum retires into these, when the membrana tympani is drawn inwards; and that it again returns into the

tympanum when this membrane is relaxed. The conveyance from the palate to the ear supplies a fund of air necessary for renewing that in the tympanum. The fenestra ovalis being entirely blocked up by the basis of the stapes, after it has received the tremulous motions of the other two bones, and of the air in the tympanum, it can easily communicate them to the vestibulum, and the air in it, and thence to the cochlea and the three semi-circular ducts.

The connection between hearing and speech is usually accounted for by the communication of the soft portion of the auditory nerve, with those branches of the fifth pair of nerves, which are distributed to the parts destined for the formation of voice: for this reason it is said that men and birds can mutually incite each other to sing; and that those who are deaf from their birth, must of course be likewise dumb. Anatomists are also of opinion, that the communication of the second vertebral pair with the external ear, is the reason why, upon hearing the least noise, we turn our heads to the quarter whence it comes; and why the whole of the body is disposed to various motions, according as the causes of the noise are imagined to be hurtful or beneficial to itself; and since these nerves communicate with those of the lungs and heart, we become sensible of proportionable alterations in our pulse and respiration, according to the diversity of noises. But all are not agreed, with regard to the effects of these different communications.

EAR-WIG, *Forficula*, in zoology. See *Forficula*.

EARL, a title of nobility, next below a marquis, and next above a viscount. Earls were anciently called comites, because they were wont *comitari regem*, to wait upon the king for counsel and advice.

EARL *Marshal of England*, a great officer who had anciently several courts under his jurisdiction, as the court of chivalry, and the court of honour. Under him is also the herald's office, or college of arms. He hath some pre-eminence in the court of Marshalsea, where he may sit in judgment against those who offend within the verge of the king's court. This office is of great antiquity in England, and anciently of greater power than now; and is now and has been for several ages hereditary in the most noble family of Howard.

EARNEST, *Antice*, money advanced to bind the parties to the performance of a verbal bargain. By the civil law, he who

recedes from his bargain loses his earnest; and if the person who received the earnest give back, he is to return the earnest double. But with us, the person who gave it is, in strickness, obliged to abide by his bargain; and in case he decline it, is not discharged upon forfeiting his earnest, but may be sued for the whole money stipulated.

EARTH, in geography, this terraqueous globe whereon we live, consisting of land and water.

That the earth is nearly spherical may be shewn by the following observations. 1. When we are at sea on board a ship, we may be out of sight of land, when the land is near enough to be visible, if it were not hid from our eye by the convexity of the water; thus, let A B C D (plate XVIII. *fig. 1.*) represent part of the globe of the earth; let M be the top of a mountain; this cannot be seen by a person on board a ship at B, because a line drawn from M to his eye at E is intercepted by the convexity of the water: but let the ship come to C, and then the mountain will be visible, because a line may be drawn from M to his eye at F. 2. The higher the eye is, the farther will the view be extended: it is very common for sailors from the top of the mast of a ship to discover land or ships at a greater distance than they can do when they stand upon deck: thus (*fig. 2.*) the top of the tower D may be seen from B, the top of the mast, when it cannot be seen from A, by reason of its being hid by the convexity of the water. 3. When we stand upon the shore, the highest part of a ship is visible at the greatest distance: if a ship is going from us out to sea, we shall continue to see the mast, after the hull or body of the ship disappears, and the top of the mast will continue to be seen longest; if a ship becoming towards us, the top of the mast comes first into view, and we see more and more of it, till at last the hull appears: thus let the eye be at C, when a ship is as far off as at F, only the top of the mast is visible, the hull is hid behind the water; when the ship is nearer, as at E, the hull may also then be seen. If the surface of the sea were a flat, (*fig. 3.*) a line might be drawn from any object situated upon it, as the ship D, to the eye; whether placed high or low, at A or B: in this case, any object upon the earth or sea would be visible at any distance which was not so great as to make the appearance of it too faint, or the angle under which it appears too small,

to be seen by us : an object would be visible at the same distance, whether the eye were high or low : not the highest but the largest objects would be visible to the greatest distance, so that we should be able to see the hull of a ship further off than the mast : all which is contrary to experience.

4. The convexity of the water may be seen upon any still water, as upon a river which is extended in a straight line, a mile or two in length ; a little boat upon the water may be seen, at a mile distance, by a man whose eye is any height above the water : but if he stoops down, and lays his eye near the water, he will find the surface thereof rising up in such a manner as to cover the boat, and intercept his view of it. 5. Several navigators have sailed quite round the globe ; not in an exact circle, for this the winding of the shores, the land running out in many places into the sea would not admit of ; but going in and out, as the shores happen to lie, they have held on the same course, and come home on a different side from that they first set out from : thus, Ferdinand Magellan, setting out on the west-side of Spain, continued sailing westward till he returned home on the east-side of Spain ; our Sir Francis Drake, Capt. Dampier, Lord Anson, and others, have done the like ; the course they have some of them run is marked upon several maps and globes : these proofs are sufficient to evince the roundness of the water. That the earth is also round is evident, if we consider that the ocean is diffused all over the globe, so as to divide the earth as it were into large islands ; and that the surface of the earth is not very much higher than the sea, is evident from the course of rivers, which at a moderate estimate are computed to have not above one mile fall in running a thousand miles, and have their shores pretty much of the same height, as also from the height of mountains, which are none of them found to be above three or four miles higher than the surface of the sea : these experiments prove the earth and sea to have a convex surface everywhere. 6. All the appearances of the heaven, both at land and sea, are the same as they would be if the earth were a globe, which proves it to be of that shape ; and lastly in eclipses of the moon, which are caused by the shadow of the earth falling upon the moon, as will appear under the article *Eclipse*. This shadow is always circular, whatever situation the earth is in at that time : now a body can be no other than a globe, which in all situations casts

a circular shadow ; it is true the surface of the earth is not an exact geometrical globe, because it sinks into vallies in some places, and rises into mountains in others ; but these inequalities upon its surface are as inconsiderable, when compared with the magnitude of the earth, as the little asperities upon the rind of an orange are to the bulk of the orange ; and accordingly we find that mountains and vallies upon the surface of the earth cause no irregularities in its shadow, in a lunar eclipse, but the circumference thereof is even regular, as if it were cast by a body exactly globular : the diameter of the earth is about 8000 English miles ; the highest mountain is not four miles higher than the surface of the sea, which is about a 2000th part of the earth's diameter : thus it appears that the highest mountain bears no greater proportion to the bulk of the earth than a grain of dust does to a common globe.

But, though the earth be spherical, yet it is not a true sphere, but an oblate spheroid, flatted towards the poles ; that is, the axis of the earth is not so long as the diameter of the equator.

The king of France, at an expence becoming a monarch who delighted in cultivating the sciences, sent two companies of mathematicians, the one to the equator, and the other to the arctic circle, in order to decide this affair, and accurately determine the true figure of the earth.

Probl. Let $APEpA$ (*fig. 4.*) be a meridian of the earth, Pp its axis and the height of the pole, in any two places on that meridian, as S and T , at a given distance, but not very far from each other, to be truly determined, and the same thing to be done at two other places, s , t , a considerable distance from the former, either on the same or any other meridian : it is required from thence to find the ratio of the earth's equatorial and polar diameters, and length of each of them, allowing the form of the earth to be spheroidal.

EARTH, in gardening and husbandry, if good, should be of a blackish colour, gravelly, fat, pliant, or easy to be digged ; it should be neither cold nor light, it ought to have no ill smell or taste, and it should be of the same quality three or four feet deep for trees, which if they have not that depth, will languish and decay after they have been planted six years. Fruit-trees will thrive in a less depth, and they generally produce the most generous fruit, when their roots spread near the surface of the earth.

EARTH, in chemistry, the fourth of the chemical elements or principles, into which bodies are resolvable by fire.

Magnetism of the EARTH. See *Magnet.*

Theory of the EARTH. The earth in its natural and original state Des Cartes, Burnet, Woodward, and Whiston, suppose to have been perfectly round, smooth, equable; and they account for its present rude and irregular form principally from the great deluge. See *Deluge.*

EARTH-BANKS, in husbandry, &c. a very common fence about London, and in several other parts of England. Where stones are not to be had cheap, these are to be preferred to all other fences, both for soundness and lasting.

EARTHING, in agriculture and gardening, signifies the covering of shrubs and plants, as vines, celery, &c. with earth.

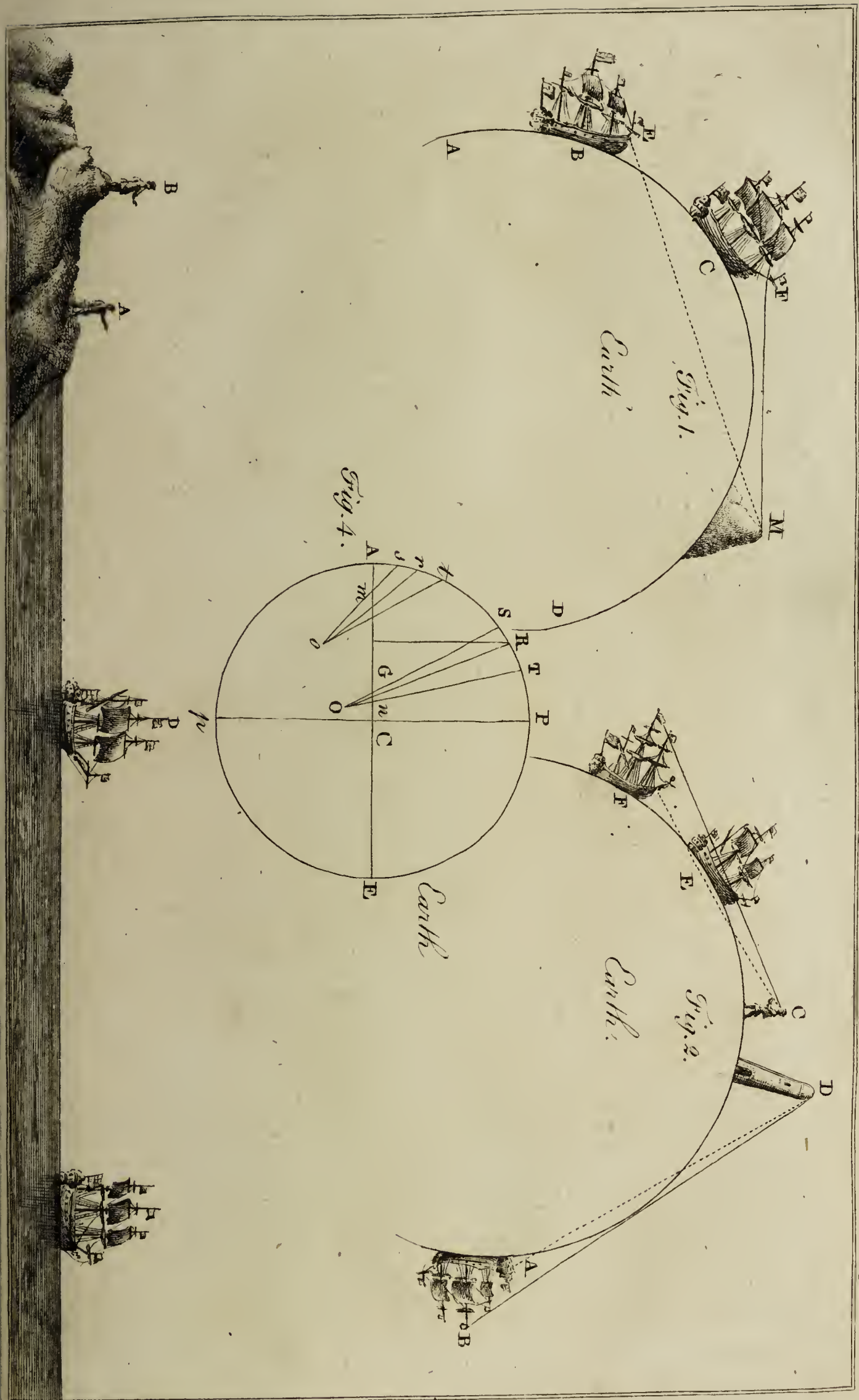
EARTHQUAKE, in natural history, a violent agitation of some considerable part of the earth, generally attended with a terrible noise like thunder, and sometimes with an eruption of fire, water, winds, &c. Earthquakes are allowed to be the greatest and most terrible phenomena of nature, there being no security against their effects.

There are two sorts of earthquakes; the one caused by the action of the subterraneous fires and the explosion of the volcanos; which are not felt but at small distances, and at the times that the volcanos are agitated, or before they begin to open: and the other from air. When the materials that form subterraneous fires comes to be fermented, heated, and inflamed, the fire makes efforts on all sides; and if it does not naturally find an outlet, it rises the earth, and makes a passage for itself by throwing it off, by which means a volcano is produced; the effects of which are repeated, and they last in proportion to the quantity of inflammable matter it contains: if this matter be inconsiderable, there may happen a rising of the ground, a commotion, and an earthquake, without any volcano being formed by that means: the air, produced and rarefied by the subterraneous fire, may likewise find small outlets by which it may escape; and in this case there will only happen an earthquake without any eruption or volcano. But when there is a large quantity of inflammable matter, and when it is locked up and confined by solid and compact substances, there happens a commotion and a volcano too: but all these commotions cause no more than the first sort of earth-

quakes, and can only shake a small space of ground. A very violent eruption, for instance, of Mount *Ætna*, will cause an earthquake over the whole island of Sicily; but it will never extend to three or four hundred leagues distance. When some new vents of fire have been formed in Mount Vesuvius, there are felt at the same time earthquakes at Naples, and in the neighbourhood of the volcano; but these concussions have never shaken the Alps, nor been communicated to France, or other countries remote from Vesuvius: in this manner, earthquakes, produced by means of volcanos, are confined to a narrow space; which is properly the effect of the re-action of the fire, and they shake the earth, just as the explosion of a powder magazine causes a sensible concussion at several leagues distance.

But there is another sort of earthquakes very different as to their effects, and, probably, as to their causes; and these are such as are felt at considerable distances, and which shake a long tract or slip of ground without any volcano or eruption appearing. We have instances of earthquakes which are felt at the same time in England, France, Germany, and even in Hungary; and these always extend a great deal more in length than in breadth; they shake a tract of ground with more or less violence in different places; and they are almost always accompanied with a dull noise, much like that of a large carriage that rolls along swiftly.

In order to understand thoroughly what may be the causes of this kind of earthquakes, we must remember that all inflammable matters capable of explosion, such as gun-powder, generate a large quantity of air; that this air, produced by the fire, is in a state of very great rarefaction; and that by means of this compression, in which it finds itself in the bowels of the earth, it must produce very violent effects. Let us, therefore, suppose that at a very considerable depth, as a hundred or two hundred fathoms, there be found pyrites and sulphureous substances, and that by the fermentation produced by the filtering of the waters, or other causes, these happen to take fire, let us see what will be the result: in the first place, these substances are not regularly disposed in horizontal strata; on the contrary, they are contained in the perpendicular fissures, in the caverns at the foot of these fissures, and in other places where the water can act, and into which they



can penetrate: these substances, coming to take fire, will generate a large quantity of air, whose spring being compressed in a little room, as in that of a cavern, will not only shake the superior ground, but seek for passages to escape by and to extricate itself. The passages that present themselves, are the caverns and canals formed by the subterraneous waters and rivulets; the rarefied air will violently precipitate into all the passages that are open, and form a furious wind in these subterraneous cavities, the noise of which shall be heard at the surface of the earth, accompanied with concussions thereof; this subterraneous wind produced by the fire will extend as far as these cavities, and cause an earthquake more or less violent, in proportion as it is remote from the fire, and finds passages more or less narrow: this motion being performed lengthwise, the concussion will be in the same direction, and the earthquake felt in a long zone or tract of ground. *Buffon's Histoire Naturelle,*

Earthquakes may be produced artificially, by mixing equal quantities of sulphur and the filings of iron, and beating them together, with an addition of water, into a kind of paste; and burying the whole three or four feet under the surface of the earth: and in seven or eight hours time the earth will begin to tremble, crack, and smoke, and burst out into flames.

* **EARTHQUAKE**, in London, happened on Feb. 8, and Mar. 8, 1750. There were two very severe shocks, but did no other damage than that of alarming the inhabitants. Dr. Sherlock, then bishop of London, published pastoral letters to his flock on this occasion, exhorting them to deprecate the vengeance of God by repenting of their sins. His majesty George II. proclaimed a solemn fast upon the occasion, to be observed throughout England; and it was in general observed that these tremendous shocks, had a great effect upon the morals of the people.

EASEMENT, in law, a privilege which one neighbour has of another, whether by charter or prescription, without profit: such are passages through his lands, a sink, or the like. These, in many cases, may be claimed.

EAST, one of the four cardinal points of the world; being that point of the horizon where the sun is seen to rise when in the equinoctial. See *Compass, Horizon, Equinoctial, &c.*

EASTER, the great festival of the anniversary commemoration of our Saviour's

resurrection. The Greeks and Latins call it *pascha*, originally an Hebrew word, signifying a passage, applied to the feast of the passover held by the Jews about the same time. In English, it is called Easter, from a goddess of that name, worshipped by the Saxons in April.

It was in conformity to the custom of the Jews, who were commanded by God himself to celebrate the passover in the first month, and on the fourteenth day of that month in the even, that the primitive fathers ordered that the fourteenth day of the moon from the calender new moon, which immediately follows after the twenty-first of March, at which time the vernal equinox happened upon that day, should be deemed the Paschal full-moon, and that the Sunday after, because our Saviour rose on the day after the Jewish passover, should be Easter-day; and it is upon this account that our Rubric has appointed it upon the first Sunday after the first full-moon immediately following the twenty-first day of March, upon which day, at that time, the vernal equinox happened: whence it appears that the true time of celebrating Easter, according to the original institution of the feast of the passover, as well as according to the intent of the council of Nice, was to be the first Sunday after the first full-moon immediately following the vernal equinox, or when the sun entered into the first point of Aries: and this was the principal view pope Gregory had, when he reformed the calender, to celebrate Easter according to the intent of the Nicene council: and as the new style has been ordered by act of parliament to be used in Great-Britain for the future, it will be necessary to shew the method of finding Easter, according to this method of computation, which may be performed by the following rule.

Find the epact for the year proposed, and if it be less than 24, subtract it from 74; but if it be 24, it must be taken from 73; also, if the epact be 24, and the golden number between 12 and 19, both numbers inclusive, the epact must be taken from 73, and the remainder will be Easter limit, or the day of the Paschal full-moon. If the limit do not exceed 31, the day of the full-moon will be in March; but if it exceeds, 13 it will be in April, the Sunday after which full-moon will be Easter-day.

We shall insert the following table, by which Easter-day may be found by inspection from the present time, till the year 1899, inclusive, according to the Gregorian method.

A Table

A TABLE to find EASTER till the year 1899 inclusive.

SUNDAY LETTERS.

G. Numb.	A.	B.	C.	D.	E.	F.	G.
I.	April 16.	17	18	19	20	14	15
II.	April 9	3	4	5	6	7	8
III.	March 26	27	28	29	23	24	25
IV.	April 16	17	11	12	13	14	15
V.	April 2	3	4	5	6	March 31	April 1
VI.	April 23	24	25	19	20	21	22
VII.	April 9	10	11	12	13	14	8
VIII.	April 2	3	March 28	29	30	31	April 1
IX.	April 16	17	18	19	20	21	22
X.	April 9	10	11	5	6	7	8
XI.	March 26	27	28	9	30	31	25
XII.	April 16	17	18	19	13	14	15
XIII.	April 2	3	4	5	6	7	8
XIV.	March 26	27	28	22	23	24	25
XV.	April 16	10	11	12	13	14	15
XVI.	April 2	3	4	5	March 30	31	April 1
XVII.	April 23	24	18	19	20	21	22
XVIII.	April 9	10	11	12	13	7	8
XIX.	April 2	March 27	28	29	30	31	April 1

To make use of the preceding table, find the Sunday letter for the year in the uppermost line, and the golden number, or prime, in the first column; and in the common angle of meeting, you have the day of the month on which Easter falleth that year. But note, that the name of the month is set on the left hand, or just with the figure, and does not as in other tables, by descent, but collateral.

EASTERN, whatever relates to the east.

EAVES, in architecture, the margin or edge of the roof of an house; being the lowest tiles, slates, &c. that hang over the walls, to throw off water to a distance from the wall.

EAVESLATH, a thick feather-edged board, generally nailed round the eaves of a house for the lowermost tiles, slates, or shingles, to rest on.

EBONY, *Ebenus*, in botany, a tree supposed to be of the palm-kind, the wood of which is imported from the East and West-Indies. Its wood is extremely solid, and capable of a fine polish; it is much used in toys and marquetry.

ECCLESIASTES, a canonical book of the Old Testament, the design of which is to shew the vanity of all sublunary things. It was composed by Solomon, who enumerates the several objects on which men place their happiness, and then shews the insufficiency of all worldly en-

joyments. The Talmudists suppose king Hezekiah to be the author of it; Grotius ascribes it to Zorobabel, and others to Isaiah; but most commentators believe this book to be the produce of Solomon's repentance, after having experienced all the follies and pleasures of life.

ECCLESIASTICAL, whatever belongs to the church: as ecclesiastical polity, jurisdiction, history, &c.

ECCLESIASTICUS, an apocryphal book, so called from its being read in the church, *ecclesia*, as a book of piety and instruction, but not of infallible authority. The author of this book was a Jew, called Jesus the son of Sirach. The Greeks call it the Wisdom of the son of Sirach.

ECHINITES, in natural history, the name by which authors call the fossil centronia, frequently found in our chalk-pits.

ECHINOPS, or ECHINOPAS, glove thistle, in botany, a genus of plants.

The roots and seeds of which are said to be attenuant and diuretic.

ECHINUS, in zoology, a name frequently used for the erinaceous, or common hedge-hog.

ECHINUS, in architecture, a member or ornament near the bottom of the Ionic, Corinthian, and Composite capitals.

ECHIUM, viper's bugloss, in botany, a genus of plants.

A powder of the root of which is recommended against epilepsies : it is also a sudorific, vulnerary, and prescribed against the erysipelas.

ECHO, a sound reverberated, or reflected to the ear from some opposing body.

ECHO, in architecture, is applied to certain vaults and arches, generally of elliptical or parabolical figures, erected to produce artificial echoes.

* ECHO, in fabulous history, a nymph sent by Jupiter to amuse Juno by her tales, whenever he was engaged in a new amour, and by that means prevented his being discovered ; but the jealous goddess finding out the deceit, deprived her of the use of speech, and only left her the power of pronouncing the last word in a sentence ; the nymph afterwards falling in love with Narcissus, and being unable to express her passion, fled to the covert of the woods and caves, where pining away till she had nothing left but bones and voice, the former petrified, and the last is found in caves. Others say this effect was produced from her being slighted by Pan, by whom she had had a daughter called Irynge.

ECLIPSE, in astronomy, a privation of the light of some luminary, by the interposition of an opaque body, either between it and the eye, or between it and the sun. The word is derived from the Greek, to leave or forsake.

All dark bodies, exposed to the direct light of the sun, cast a shadow behind them ; which is nothing but the privation of light in the space opposite the sun, by reason of the sun's rays being intercepted by the opaque body : and as the globes of the earth and moon are both opaque bodies, which borrow all their light from the sun, when either interposes, the other must in some measure be obscured.

Hence it appears, that a solar eclipse is caused by the interposition of the moon betwixt the sun and the earth ; and a lunar one, by that of the earth betwixt the sun and moon.

The geometrical construction of solar eclipses for particular places of the earth.

Lemma I. To an observer in the sun the earth's enlightened hemisphere would appear a superficial disk : to him the several parts of land and water would directly appear as if projected on a plane ; consequently, if circular lines, such as the meridians, parallel, &c. were drawn or imagined upon it, there may be conceived an orthographical projection of the sphere.

II. Every place upon the earth's surface, to the eye as above, in each diurnal revolution, apparently describes an elliptical path, or otherwise a right line, parallel to the equator ; the axis of which, at different times of the year, is variously inclined to the right, or to the left, from the axis of the ecliptic ; that is,

III. During the sun's progress through the summer and autumn signs, to wit, \varnothing , \odot , \mathfrak{M} , \equiv , \mathfrak{M} and \mathfrak{F} , the axis of the earth projected on the above plane lies to the left of the axis of the zodiac ; but if the sun be in any of the other opposite signs, it will on the contrary be thrown to the right. If the sun's place be in any of the north signs, that is, γ , δ , π , &c. the north pole will be enlightened ; but if otherwise, to the south, it will be obscure.

Corollary. The conjugate diameter of every elliptical path apparently increases and decreases, as the sun's declination doth increase or decrease. If the sun is in the equinoctial, the path of each vertex will then be a right line, but at all other times orbicular.

If it is to be observed, that the transverse diameter of the ellipsis, representing the path of any place, is always equal to twice the sine complement of the respective latitude ; and the conjugate one to the difference of the sines, betwixt the sum and difference of the two complements, latitude and the sun's declination.

Lunar ECLIPSES are occasioned by the interposition of the earth betwixt the sun and moon, whereby the moon is deprived of her lustre by falling into the earth's shadow ; and for the same reason as to quantity and duration, is both general and universal. A lunar eclipse can never happen but at the full, and when the moon is less than half a sign from one of the nodes. Now the moon although deprived of the direct solar beams, is not absolutely hid from us at the same time, as at the change ; because the rays of light passing through our atmosphere are refracted, and thrown obliquely into the real shadow, and thereby faintly illuminate the whole cone : hence it is that the moon's body remains visible to us, though it be totally eclipsed.

The beginning and ending, &c. of a lunar eclipse are found in the same manner by the angles of incidence, &c. only with this difference, that, whereas in the latter it is understood of the disk and penumbra, here the same is to be understood of the moon and the earth's shadow.

ECLIP.

ECLIPTIC. in astronomy, that circle which the plane of the earth's orbit would mark out, were it supposed to be extended to the heavens. This therefore is that which the sun seems to describe in his annual course. The axis of the ecliptic is a right line supposed to pass through the center of the sun, and to be perpendicular to the plane of the ecliptic; and the points in the heavens, to which this axis is directed, are called its poles; and the great circles passing through these poles will be perpendicular to the ecliptic, and therefore called its secondaries, and sometimes circles of longitude.

By means of these the place of any star is referred to the ecliptic, and its longitude and latitude estimated: for the longitude of a star is an arch of the ecliptic intercepted between the first point of Aries, and that where one of these secondaries that passes through the star cuts the ecliptic; and the latitude of a star is the arch of the same secondary intercepted between the star and the ecliptic. Upon this account all circles conceived to be drawn parallel to the ecliptic, that is, parallels of the ecliptic, are sometimes called parallels of latitude. The latitude of a star is either northern or southern, as the star is placed on this or that side of the ecliptic.

The ecliptic is divided into twelve parts, called signs. They begin at that point in which the sun appears to be at the vernal equinox, and are reckoned from west to east. The names of the said signs, together with the characters whereby they are commonly expressed, are these that follow.

Aries. Taurus. Gemini. Cancer. Leo. Virgo.

♈ ♉ ♊ ♋ ♌ ♍

Libra. Scorpio. Sagittarius. Capricornus.

♎ ♏ ♐ ♑

♒ ♓

♈ ♉

The first six of these are called the northern signs, as possessing that half of the ecliptic which lies nearest the north pole of the earth; the latter, the southern, as being in that which is nearest the south pole. The sun is always seen in some part of the circle; but the planets, by reason of the inclination of the plane of their orbits to that of the ecliptic, appear sometimes above it, and sometimes below it, but never deviate from above 7 or 8 degrees on either side: so that if we imagine a space surrounding the heavens 16 degrees in breadth, and extended equally above and below the ecliptic, this will in-

clude all their ecliptics, so to speak; that is, all the circles they would appear to move in when seen from the sun, and is called the zodiac.

The signs of the ecliptic took their names from 12 constellations situated in the heavens near those places. But it must be remembered, that the signs are different from the constellations which bear the same name: for the sign Aries is not, for instance, in the same part of the heavens with the constellation Aries; the former is only 30 degrees of the ecliptic counted from one of the equinoctial points, whereas the constellation is a system of stars, the most of which are now situated between the first and last degree of Taurus: and so of the other signs. These constellations were, in their infancy of astronomy, situated within the signs which now bear their names: but by a slow retrograde motion of the equinoctial points, called the precession of the equinoxes, the constellation Aries has got into the sign Taurus, and that of Pisces into the sign Aries; and so of the rest.

If there be any change in the obliquity of the ecliptic, which it is very probable, it may be caused either 1. by a change in the inclination of the earth's axis, the plane of the earth's orbit continuing immoveable; or, 2. by a change in the plane of the earth's orbit the axis of the earth continuing parallel to itself; or 3. by a change both in the inclination of the axis and in the situation of the earth's orbit. The first of these seems most likely to be the case; for if we consider the shape of the earth, that it is an oblate spheroid, or a globe a little flattened like a turnip, having its diameter at the poles a little shorter than at the equator; and that by reason of this figure of the earth, the attraction of the heavenly bodies will act upon it in the same manner as if it had a ring round the equator; and that the sun being in the plane of the ecliptic, is perpetually pulling this ring, or the protuberant parts about the equator of the earth, towards a coincidence with the plane of the ecliptic; which action of the sun, together with the like attraction of the moon, is the cause of the precession of the equinoxes; and if this be considered, it will not appear improbable, that these actions of the sun and moon, which have a continual tendency to bring the plane of the earth's equator nearer to the plane of the ecliptic, should gradually diminish the angle between these planes. The moon indeed, being nearer to the earth, contributes more

than the sun towards this effect, by her attraction; for though she be but twice a month in the ecliptic, yet since she is always near it, never deviating much above five degrees from that circle; and these deviations are as much towards the north in one half of her period round the earth, as they are towards the south in the other; they will so balance one another, that the effect of the whole attraction of the moon will be pretty much the same, as if she were carried round the earth exactly in the plane of the ecliptic. However, all changes in the position of the ecliptic are not to be absolutely excluded; for, as the planets move round the sun in different planes, their mutual attractions must have a tendency to change the situation of all their planes, and bring them nearer to a coincidence with one another: but then the distance of the planets from each other is so great, that the change here mentioned may be so exceedingly small as not to become sensible in many ages.

ECLOGUE, in poetry, a small elegant composition in a simple natural style. The word takes its derivation from the Greek, to select.

The eclogue, in its primary intention, is the same thing with the idyllium; but custom has likewise made some difference between them, and appropriated the name eclogue to pieces wherein shepherds are introduced; and idyllium to those written like eclogues, but without shepherds in them. The eclogue is properly an image of the pastoral life; therefore the matter is low, and its genius humble. Its business is to describe the loves, sports, piques, jealousies, intrigues, and other adventures of shepherds; so that its character must be simple, the wit easy, the narration short; the thoughts ingenious, the manners innocent, the language pure; the verse flowing, the expressions plain, and all the discourse natural. The models in this sort of poetry are Theocritus and Virgil, who both have some eclogues of a lofty character: the eclogue, therefore, occasionally raises its voice. Yet M. Fonténelle esteems it a fault in some modern poets to have put matter of high concern in their eclogues, and made their shepherds sing the praises of kings and heroes.

ECPIESMA, in surgery, a sort of fracture of the cranium, when the bones are shattered, and, pressing inwardly, affect the membranes of the brain.

ECTHLIPSIS, among Latin grammarians, a figure of prosody, whereby the *m* at the end of a word, when the following word begins with a vowel, is elided, or cut off, together with the vowel preceding it, for the sake of the measure of the verse: thus they read *mult' ille*, for *multum ille*.

ECU, a French crown. See *Exchange*.

ECUSSON, in heraldry, a little escutcheon.

EDDISH, or **EADISH**, the latter pasture or grafs that comes after mowing, or reaping; called also eagrafs, earsh, and etch.

EDGINGS, in gardening, the series of small, but durable, plants, set round the edges or borders of flower-beds, &c. The best and most durable of all plants for this use is box, which, if well planted, and rightly managed, will continue in strength and beauty for many years. The seasons for planting this are the autumn, and very early in the spring: and the best species for this purpose is the dwarf Dutch box. The edgings of box are now only planted on the sides of borders, next walls, and not, as was some time since the fashion, all round borders or fruit beds, in the middle of gardens, unless they have a gravel walk between them, in which case it serves to keep the earth of the borders from washing down on the walks in hard rains, and fouling the gravel.

* **EDGEHILL**, battle of, October 23, 1642. Charles the first had no sooner assembled an army, with which he thought he could act upon the offensive, than he began his march from Shrewsbury towards London; and in two days after his departure, the earl of Essex put himself in motion to attend his rear. On the twenty-second day of October, the armies were within six miles of each other. The king having received intelligence that Essex had advanced to Keinton, a village on the borders of Warwickshire, drew up his army on Edgehill, about two miles from the enemy; and on Sunday the twenty-third day of the month, gave them battle. The army of Essex was superior in number to the royalists, who did not exceed ten thousand horse and foot. He posted Ramsey, a Scottish officer, at the head of a thousand horse, on the left wing. He himself commanded the line of the infantry, with about two regiments of cavalry, extending from Keinton towards Edgehill; and sir William Balfour acting under

Under the earl of Bedford, was intrusted with a strong body of horse as a reserve. The king's right wing of horse was commanded by prince Rupert, the left by commissary Wilmot, and sir Arthur Ashton. The earl of Lindsey, though general, fought on foot at the head of his own regiment, sir Edmund Verney, knight-marshal carried the king's standard; and sir John Byron formed the reserve with his own regiment only. About three o'clock in the afternoon, prince Rupert advancing to charge the left wing of the enemy, sir Faithful Fortescue, with his whole troop, deserted from Ramsey, and joined the prince, who charged their adversaries with such fury, that they were immediately routed, and pursued for two miles. Wilmot and sir Arthur Ashton met with the same success against the right wing of Essex; and the reserve under Byron joined in the pursuit, leaving the infantry on both sides to dispute the fortune of the day. During this contest, sir William Balfour advancing with his reserve, fell upon the flank of the royalists, and did great execution. The earl of Lindsey was mortally wounded, and his son the lord Willoughby, taken prisoner, while he endeavoured to rescue his father; sir Edmund Verney being slain, the standard fell into the hands of the enemy, but was recovered by the valour of captain John Smith. The king's whole infantry was thrown into confusion, and himself with his two sons in great danger of being taken. When prince Rupert and Wilmot returned from the pursuit, their troops were so fatigued and scattered, that they could not be brought into order so as to renew the charge; and night approaching, left the fate of the day undecided. Each side kept its ground, and next morning both armies fronted one another. About five thousand combatants lay dead on the field of battle, the greater number of these having been killed by the king's cavalry. Besides the earl of Lindsey, and sir Edmund Verney, the king lost the lord Aubigny, brother to the duke of Richmond and Lenox. Among those who fell on the other side, were the lord St. John of Bletnezo, eldest son to the earl of Bolingbroke, and Charles Essex, an officer of reputation. Lord Willoughby, sir Thomas Lunsford, sir Edward Stradling, and several persons of distinction in the king's army, were taken. His soldiers suffered greatly from the cold, which was very severe in the night; and indeed, both sides seemed to think themselves van-

quished. Essex retired to Warwick castle; and the king having appointed Ruthven, general of his army, in the room of the earl of Lindsey, marched to Banbury, and summoned the castle to surrender. Though the garrison consisted of eight hundred infantry, and a troop of horse, they immediately capitulated; and one half of the soldiers enlisted in the king's army. Here he left a garrison, under the command of the earl of Northampton, and next day entered Oxford, where he was received with joy and acclamation.

* EDINBURGH, the metropolis of Scotland. The Romans could not well have made choice of a better spot for a fortification; for the rock on which the present castle is seated is inaccessible on all sides except the east. The first building of a fort here seems to have given rise to the town, and to have encouraged the neighbours to have fixed under the protection of it. The city has six gates, the principal of which, towards the east, called the Nether-bow, was magnificently rebuilt in the year 1616, and adorned with towers on both sides. The street run the whole length of the town, the Highstreet which extends from the castle to the abbey, is said to be the broadest in Europe, and all built of hewn stone, six or seven stories high, with sash-windows. But then it must be remembered, that each story is a distinct house, and has a particular owner, and has one stair-case common to them all. Timber houses were prohibited long ago by an act of the town council, on account of the many fires that have happened. In the middle of the city stand St. Giles's church, the cathedral built of hewn stone, adorned with stone pillars and vaultings. The collegiate church of the Sacred Trinity was built by Mary of Gueldres, king James the Second's queen. The Lady Yester's church was built and endowed by one of the lady Yesters; and there is another very beautiful, the latest built of all. To these we must add two chapels, St. Magdalen's and St. Mary's, with another at the foot of the Canon-gate. On the south side is the college of king James the Sixth, founded in the year 1580, and endowed with all the privileges of an university.

The royal palace, called Holy Rood House, is at the bottom of the Canon-gate, and has four courts; the outer court, which is as big as all the rest, has four principal entries. It is surrounded on all sides with handsome gardens, and on the south lies the King's park, which has a great

great variety of medicinal plants. The entry of the palace is adorned with great pillars of hewn stone, and a cupola in the fashion of a crown above it. The fore part is terminated by four high towers, two towards the north erected by James V. and the rest by Charles II. The inner court has piazzas round it, all of hewn stone. But above all, the long gallery is most remarkable, it being adorned with the pictures of all the kings of Scotland from Fergus I.

There is a college of justice, which hath its dean of faculty, and they try all their candidates. King Charles the Second likewise erected a college of physicians here, given them by patent under the great seal, an ample jurisdiction within the city and liberties, appointing the judicatures to concur with them in the execution of their decrees, and by a latter grant they have the liberty of professing physic, and no one can commence doctor of physic, regularly in this university, without being examined by them. There are now public professors of every branch of medicine, and Edinburgh has as famous a school for this study as any in Europe. The city is surrounded by an old Roman wall on every side, except towards the north, where it is secured by the North Loch.

It is governed by a lord provost, and four bailiffs, who besides the power of aldermen in the government of the city, have that of sheriffs. The fourteen incorporated trades, are surgeons, goldsmiths, skinnners, furriers, hammer-men, wrights, masons, taylor, bakers, butchers, cordwainers, weavers, wakers or fullers, and bonnet makers.

Before the Union the parliament used to meet here, as the general assembly still does. Here likewise the supreme courts of justice are held. It was the see of a bishop till episcopacy was abolished. Those of the episcopal persuasion now assemble in meeting-houses. It is four hundred measured or English statute miles north-by-west from London. Long. 3. 2. W. Lat. 55. 57. N.

EDICT, *Edictum*, an order or instrument, signed and sealed by a prince to serve as a law to his subjects.

EDITOR, a person who has the care of an impression of any work, particularly that of an ancient author.

EDUCATION, the bringing up and forming the minds of children, either in point of learning or good manners.

EDULCORATION, in pharmacy, the same with dulcifying. See *Dulcifying*.

EDULCORATION, in chemistry, is the sweetening or clearing of any matter from impurities, by washing it thoroughly in common water; so that it is the same with a blution.

* **EDWARD I.** king of England, surnamed Long Shanks, was son of Henry III. and born at Winchester, 1239. He was taller by the head than men generally are; and his person was well made; but his legs being rather too long, he thence obtained the name of Long Shanks. He carried on a crusade against the Saracens, where, with only ten thousand Englishmen, he struck a general panic into the infidels. He there narrowly escaped being murdered, being wounded by an assassin in the arm with a poisoned dagger; and it is said that he owed his life to the affection of Eleanor his wife, who sucked the venom out of the wound. While he was on his return from Palestine he heard of the death of his father, which happened in 1272, and arriving in England with his queen, they were both crowned on the 10th of August, 1274. He began his reign by confirming the Magna Charta, and by making a strict enquiry into the affairs of his kingdom. He then defeated and slew Lewellyn, king of Wales, who had revolted, and afterwards summoning a parliament at Ruthen, it was there resolved that Wales should be united to England: when some of the Welsh nobles telling the king that he would never peaceably enjoy their country, till they were governed by a prince of their own nation, he sent for the queen to lie-in at Carnarvon, where being delivered of a prince, the states acknowledged him for their sovereign, and since that time the eldest sons of the kings of England have borne the title of prince of Wales. Soon after queen Eleanor dying at Grantham, in Lincolnshire, Edward erected a cross at every place where the corpse rested in the way to Westminster.

Edward then carrying his arms into Scotland, took Berwick, Dunbar, and Edinburgh; and John Baliol their king repairing to Edward, renewed his oath of fidelity, and put the whole kingdom in his power. But while Edward was endeavouring to recover some dominions he had lost in France by treachery, the brave William Wallace rose up in defence of his country, and having suddenly dispossessed the English of all the strong places they held, was declared regent of the kingdom; on which Edward hastily

E D W

returned from France, advanced into Scotland at the head of a powerful army, and defeated Wallace, who several years after, was betrayed into the hands of the English, and sent to London, where that great hero suffered the death of a traitor. Edward was seized with a dysentery, and died in the little town of Burg, the 7th of July, 1307, in the sixty-eighth year of his age, and the thirty-fifth of his reign, and was interred in Westminster-abbey.

* EDWARD II. king of England, was born at Caernarvon, April 25, 1284, and succeeded his father Edward I. in 1307, at twenty-three years of age. He recalled Pierce Gaveston, whom his father had banished. Then marrying Isabella, the daughter of the French king, they were both crowned at Westminster, the 24th of February, 1308. His ridiculous fondness for Gaveston occasioned innumerable disputes, till at length the barons had recourse to arms, and Gaveston was beheaded. In the mean time the Scots obtained three victories over the English, and made themselves masters of every place in Scotland. This weak prince who raised the two Spencers, father and son, to the summit of power; who being banished by the parliament, the king levied an army, took some castles from the barons, and recalled his two favourites.

Some time afterwards, he invaded Scotland; but wanting provisions, he returned without striking a blow: on which Bruce, king of Scotland, pursued him to York, and, after having destroyed twenty thousand of the English, consented to a peace. The two Spencers soon incurred the general hatred; and queen Isabella flying to France with her son, the nobility sent for her; when landing, and proceeding towards London with a numerous army, the king fled into the west; she still pursued him, and he set sail for Ireland; but was driven back into Wales, and being taken, was sent prisoner to the queen. Hugh Spencer, the father, was hanged and quartered, without a trial, and the young Spencer hanged on a gallows fifty feet high.

The queen was entirely governed by Mortimer, earl of March, whom she took to her bed: and the king being obliged to resign the crown in 1327, his son Edward was proclaimed king. After which, the late sovereign was treated with the greatest indignities, and at last inhumanly murdered; for some assassins having co-

E D W

vered him with a feather-bed, held him down, while others conveyed a horn-pipe up his body, through which they thrust a red-hot iron, and thus burnt his bowels.

* EDWARD III. one of the greatest kings of England, was born at Windsor, November 15, 1312, and was placed on the throne on the 26th day of January, 1327, at fourteen years of age, while his father, Edward II. was living. Though a regency was appointed by the parliament, the queen and Roger Mortimer had the sole authority; and influenced by them, the young king not only renounced all pretensions to Scotland, but gave his sister in marriage to David Bruce, king of the Scots: yet afterwards becoming sensible of the queen's ill conduct, he confined her for life, and caused Mortimer, earl of March, to be hanged at Tyburn. He then broke the truce with Scotland, invaded that kingdom, and obliged king David to fly with his queen into France, when he set up Edward Baliol in his room. Edward now laid claim to France; for Charles, his mother's brother, dying, Philip of Valois had possessed himself of the kingdom, alledging the Salic law; but Edward asserted, that the Salic law, in excluding females from the succession, did not exclude their male issue, on which he grounded his title. His first campaign passed without bloodshed; but he took the title of king of France, and quartered his arms with the flors de lis, adding the motto, *Dieu et mon droit*, or, God and my right. However, in his next attempt he defeated the French fleet. He then besieged Tournay; but being called home to oppose the Scots, concluded a truce for one year, with Philip king of France. In the next campaign he ravaged all the country, up to the walls of Paris, and his son, the Black Prince of Wales, at sixteen years of age, won the glorious battle of Cressy. Six weeks after this, the queen defeated the Scots, and took king David prisoner. These memorable victories were obtained in 1346. Edward then laid siege to Calis, and having reduced it by famine, returned to England. He soon after sent the Black Prince, who, after taking several towns, totally routed the French army, commanded by king John, who had succeeded Philip; and in this glorious battle, which was fought near Poitiers, took the king, many nobles, and a multitude of private men prisoners, though the French army was six times

as numerous as the English. Thus Edward had the honour of having two kings his prisoners at the same time, John of France, and David Bruce, king of Scotland. The king of Scotland, who resided at Odiham, in Hampshire, was afterwards ransomed for one hundred thousand marks; and the French king, who lived at the Savoy agreed to pay for his ransom five hundred thousand pounds, and a considerable extent of country.

Charles king of France afterwards carried on a war with Edward, when the English were driven from all the places they had so nobly conquered, to which the death of the Black Prince greatly contributed.

Edward distinguished himself by instituting the order of the garter; and died at Richmond, in Surry, the 21st of June, 1377, in the fifty-sixth year of his age and the fifty-first of his reign, and was interred in Westminster-abbey. He was succeeded by Richard II. the son of Edward the Black Prince.

* EDWARD IV. king of England, was the son of Richard, duke of York, and disputed the crown with Henry VI. who was of the house of Lancaster. Between these two families a great number of battles were fought, with different success; but at length Edward obtained the crown, March 5, 1461, by gaining a signal victory over Henry VI. whom he forced to fly into Scotland, with Margaret of Anjou, his consort. He afterwards gained another victory over the same unhappy prince, who after his defeat, came into England in disguise, and being seized, was carried to London, with his legs tied under his horse's belly, and then confined in the Tower. The earl of Warwick who had chiefly contributed to raise Edward to the throne; was employed by that prince to negotiate a marriage for him in France, and in the mean time marrying Elizabeth, the widow of Sir John Grey, with whom the earl was in love, that nobleman was so exasperated, that he raised a rebellion, in which he twice defeated the king's forces, and afterwards took his majesty prisoner, and confined him in Middleham castle; from whence he escaped, and joining lord Hastings, in Lancashire, returned to London, when another battle ensued, and Warwick being defeated, was obliged to fly into France; but soon after landing at Dartmouth with a few troops, he soon increased them to sixty thousand men; upon which Edward also raised a nu-

merous army at Nottingham; but as his enemies were advancing, the cry of king Henry being raised in his camp, Edward fled, and escaped into Flanders. Warwick then took Henry out of the Tower, and caused him to be acknowledged king of England. But Edward afterwards returning with a small force, was received at London with acclamations of joy; and Henry was once more confined in the Tower. Edward then marched against the earl of Warwick, and routed his army, in a great battle, near Barnet, where the earl himself was slain, with seventeen thousand of his men.

Some time after, the queen having assembled an army, king Edward defeated her, and took her prisoner, with her son prince Edward, who was soon after massacred, in the eighteenth year of his age; and soon after, king Henry, his father was murdered in the Tower, or, as other say, died with grief, in the fiftieth year of his age. Queen Margaret, after being four years confined was ransomed by her father, for fifty thousand crowns. Edward caused his brother, the duke of Clarence, to be drowned in a but of sack. Edward being now at peace, spent his time in indolence and debauchery. His favourite mistress was Jane Shore. He died at Westminster, on the 9th of April, 1483, in the forty-second of his age, and the twenty-third of his reign.

* EDWARD V. king of England, eldest son of Edward IV. succeeded his father in 1483, at twelve years of age. He was at Ludlow when his father died; but being sent for to London, he on the 4th of May received the oaths of the principal nobility, and his uncle Richard, duke of Gloucester, was made protector of the king and kingdom. He obliged the queen to deliver up to him the duke of York, the king's brother, and sent them both to the Tower, under pretence of their waiting there till every thing was prepared for the coronation. Mean while the duke of Gloucester, by the assistance of the duke of Buckingham, sir John Shaw, lord mayor of London, and Dr. Shaw, his brother, had the two young princes declared illegitimate, and then caused himself to be acknowledged king of England; pretending to accept the crown with reluctance; though he had put to death lord Hastings for no other crime, but his being warmly attached to the young king; however, as that nobleman was greatly beloved by the people, Gloucester pretended

tended that his ambition and forceries endangered the kingdom; the queen and Jane Shore were accused as his colleagues, and the latter was taken into custody, but was soon after released on doing penance. Sir Robert Brackenbury, lieutenant of the Tower, refusing to comply with Richard's cruel designs, he for one night only gave the command of that fortress to sir James Tyrrell, and he procured two villains, who in the dead of the night, entered the chamber where the princes lay, and smothered them in bed. Thus died Edward V. after a reign of only three months.

* EDWARD VI. king of England, and the only son of Henry VIII. and Jane Seymour, was born October 12, 1537, and ascended the throne at nine years of age, at which time he was well skilled in the Latin and French tongues, and had obtained some knowledge of the Greek, Italian, and Spanish. His person was very beautiful; he had great sweetness of temper, and was remarkable for his piety and humanity. He was committed to the care of sixteen persons, whom Henry had nominated regents of the kingdom, the principal of whom was the earl of Hertford, the king's uncle by the mother's side, who was soon after created duke of Somerset. The young queen of Scotland was demanded in marriage for king Edward, but the same proposal being made by France, in behalf of the dauphin, she was sent into that kingdom, on which the duke of Somerset invaded Scotland, and routed the Scots army at Musselburgh. The great power of the duke of Somerset raised him many enemies, the chief of whom was Thomas lord Seymour; and articles of accusation being exhibited against him, he was attainted in parliament, and condemned and beheaded, without being brought to an open trial. However, the duke of Somerset himself was some time after impeached, and charged with a design to seize the king, and to imprison the earl of Warwick; for this he was condemned, and the young king being in a manner forced to sign the sentence, he was executed some time after. The earl of Warwick, now duke of Northumberland, succeeded to the earl of Somerset's power, and at length, on the king's being taken ill of the measles, married lord Guildford Dudley, his fourth son, to the lady Jane Grey, eldest daughter to the duke of Suffolk, and persuaded Edward to settle the crown on her, his sisters, Mary and Elizabeth, having been both declared illegitimate during the life time of their father; and the

prince, hoping to save the Reformation from impending destruction, appointed her his successor, and soon after died, on the 6th of July, 1553, in the 16th year of his age, and the 7th of his reign.

EEL, *Anguilla*, in ichthyology, a species of *muræna*. See *Muræna*.

EEL-SPEAR, a forked instrument with jagged teeth for catching of eels: that with four teeth is best, which they strike into the mud at the bottom of the river; and if it strikes against any eels, it never fails to bring them up.

EFFECT, that which results from, or is produced by, any cause.

EFFERVESCENCE, a slight degree of ebullition in liquors exposed to a due degree of heat. But the chemists apply it to that ebullition which is excited when two substances of different natures, an alcali, for example, and an acid, are mixed together. If the effervescence produces a heat in the substance so mixed, it is called a hot effervescence; but, if no heat is excited, it is a cold effervescence.

EFFICACIOUS, a term used by divines, in speaking of grace; importing such grace as never fails to produce its effect. See *Grace*.

EFFLUVIA, minute particles which exhale from bodies.

EFFUSION, in a general sense, the pouring out of any thing liquid with some violence.

EFT, in zoology, the common lizard, *lacertus vulgaris*, called also, in several parts of the kingdom, the newt and swift. See *Lizard*.

EGG, *Ovum*, in natural history, a body formed in certain females, in which is contained an embryo, or fetus, of the same species, under a cortical surface or shell.

An egg consists of the albumen or white, and of the vitellus or yolk. The albumen is a cold, viscous, white liquor in the egg, differing in consistence in its different parts.

When the vitellus grows warm with incubation, it becomes more humid, and like melted wax or fat, whence it takes up more space: for as the fetus increases, the albumen insensibly wastes away and condenses; the vitellus, on the contrary, seems to have lost little or nothing of its bulk, when the fetus is perfected, and only appears more liquid and humid, when the abdomen of the fetus begins to be formed.

The chick in the egg is first nourished by the albumen; and, when this is consumed, by the vitellus, as with milk. The albumen

albumen wastes in keeping, and that through the shell, especially if it be exposed to a gentle heat: and it is specifically lighter than the vitellus.

By incubation the albumen becomes thinner and more turbid, especially on its upper part, near the obtuse end, where it is also first consumed; and it is afterwards diminished towards the sharp end of the egg, till at last nothing of it is left, except a white cretaceous substance at the lower part of the shell. In the Edinburgh Medical Essays, we are told that the albumen of a fecundated egg, is as sweet and free from corruption, during all the time of incubation, as it is in a new-laid egg.

As the white of an egg has all the requisites to the formation of an animal body, that is, to nutrition, when properly applied by the vital actions to the parts which require it, and this without any previous digestion by the stomach, it must necessarily be one of the most proper aliments in the world, in morbid cases, where the digestive organs are relaxed and weak, where the fibres of the whole body want a due tension and elasticity, and where consequently restoratives are indicated. But in order to answer any good purpose in this view, it must be given fresh, raw, and without the application of the least heat: for heat, as Boerhaave found by his experiments, renders it unfit for nutrition. It is to be given in a little milk and water, or broth, or may be taken alone, well separated from the yolk.

The white of an egg has a refrigerating, astringent, and agglutinating quality.

The yolk is endued with an anodyne, maturating, digesting, and relaxing virtue. Hence it is very often an ingredient in clysters, and mixed with a little salt, is commonly applied, in a walnut shell, to the navels of infants, to loosen the belly.

EGG, in architecture, an ornament in that form, cut in the echinus or quarter-round of the Ionic and Composite capitals. The profile of an echinus is enriched with eggs and anchors placed alternately.

EGLANTINE, in botany, a name given to the sweet-briar, a species of rose. See *Rose*.

* EGYPT, kingdom of, in Africa, was celebrated for being anciently the seat of learning, and nursery of arts and sciences, from which Greece and other nations received them: it was also styled the granary of the world, the plenty or scarcity of the Roman empire, depending upon the good or bad harvest of this province. It is

bounded on the east by the Red Sea, and Isthmus of Suez; on the north it has the Mediterranean, from Damietta to Alexandria, and beyond; on the west it confines on Barbary, or kingdom of Tripoli, and desert of Burea; and on the south on Nubia, and the kingdom of Senaar. It lies between lat. 21. and 31. deg. north, and long. 30. and 36. deg. is 626 miles long, from north to south, and 150 in breadth from east to west. The river Nile, which rises in Abyssinia, running through its whole length from north to south, annually overflows it; which inundation usually begins in May or June, and is at its height in September; from which time the waters decrease gradually. This being the only river in the country, and there being but two springs besides, the inhabitants were obliged to build their towns on the banks of the Nile, on rising grounds, either natural or artificial; so that, upon the overflowing of the river, these might look like islands; and to which, at such times, there was no communication but by means of boats. The Nile runs about the space of 230 leagues, exclusive of its windings, and is in a manner inclosed on each side, by a ridge of high mountains; one of which, running along the western coast on the side of Lybia, extends itself quite to the Mediterranean; but that on the eastern side, towards the Red Sea, goes no farther than Grand Cairo, where it leaves the river at liberty to spread itself in that part called the Delta. Canals are cut through Egypt for refreshing their gardens and fields, and for saving water in dry weather; by which means Egypt becomes the most fertile country in all Africa. Upon the retiring of the waters of the Nile, they only harrow the seed into the mud, and in March following they have commonly their harvest; and the lands which are not sown, yield excellent pasture for their cattle. The climate of Egypt is extremely hot for two or three months before the overflowing of the river, and the musketos or gnats are intolerable in the night; but the greatest misfortune of Egypt is the plague, which generally returns once in seven years. This country though once so populous, and full of nobles cities, has now but very few places which deserve that name. For those of Rosetta, Damietta, Mansoura, &c. formerly celebrated for their beauty and opulence are now no other than overgrown villages; and even that of Alexandria, though still well-inhabited, and a considerable sea-port

on the Mediterranean, has no other defence than its old walls, which are suffered to go to decay. The animals of Egypt are lions, tygers, leopards, panthers, elephants, rhinoceroses, camels, dromedaries, monkeys, ostriches, and crocodiles. Egypt is partly subject to the Grand Signior; but his authority is extremely limited by the Egyptian princes, who are absolute in their own territories. The stone pyramids are the greatest curiosity in Egypt, the base of the largest taking up about ten acres of ground, and running up to a height of about 700 feet. The mummy pits are the next curiosity, which, with the pyramids, stand on the west side of the river, opposite to Grand Cairo. Some of the embalmed bodies in these pits are said to be at least 4000 years old; and the coffins are set upright in niches in the wall.

EJECTMENT, *Ejectione Firmæ*, in law, a writ, or action, which lies for the lessee for years, on his being ejected, or put out of his land before the expiration of his term, either by the lessor, or a stranger. It may also be brought by the lessor against the lessee, for rent in arrears; or holding over his term, &c.

EIGHT, or PIECE OF EIGHT.

See *Exchange*.

ELABORATORY, the place where chemical processes are performed. See *Chemical Laboratory*.

ELÆGNUS, Dutch myrtle, in botany, a genus of trees.

ELASTIC, in natural philosophy, an appellation given to all bodies endowed with the property of elasticity.

ELASTICITY, that property in natural bodies, by which they restore themselves spontaneously to the figure and dimensions which they had lost by the action of some other body applied to them. Thus a spring or bow, when bent, restore themselves, by their elasticity, to the form they obtained before any external force was applied to them. And thus the arteries of an animal body, after being distended by the impulse of the blood, contract, and restore themselves, by their elasticity, to the same form and dimensions they had before they were thus distended.

The most probable way of solving the elasticity of springs, is to consider both a repulsive, and an attractive property in the particles, after the manner of the black sand, which is attracted by the load-stone, and has been shewn by the learned and ingenious professor Petrus Van Muschen-

broek to be nothing else but a great number of little load-stones.

The great law of perfectly elastic bodies, is, that their relative velocity will remain the same before and after collision; that is, perfectly elastic bodies will recede from one another after the stroke, with the same velocity that they came together.

ELATINE FLUELLIN, in botany, a genus of plants, which is said to be an aperient, resolvent, and vulnerary.

* **ELBE**, a river rising on the confines of Silesia, and running south to Koninggratz, in Bohemia, afterwards runs north-west till it receives the Muldaw, at Malnick, below Prague, and continuing its course north, passes through the duchies of Saxony, visiting Dresden, Meissen, Wittenburg, and afterward Magdeburgh; then running north-west through Brandenburg, receives the river Havel, after which it divides the duchy of Lunenburg from Mecklenburg, then running between the duchies of Bremen and Holstein, visits Hamburg; and passing on still north-west by the fortress of Gluckstadt, falls into the German ocean a little below it. It is navigable for great ships higher than most rivers in Europe, for ships of three or four hundred tons may go up as high as Hamburg, which is seventy miles from the sea.

ELBOW, in anatomy, the juncture of the cubitus and radius; or the outer angle made by the flexure, or bend of the arm.

ELBOW, in architecture, an obtuse angle of a wall, building, road, &c. which divides it from its right line.

ELDERS, or SENIORS, in Jewish history, persons the most considerable for age, experience, and wisdom.

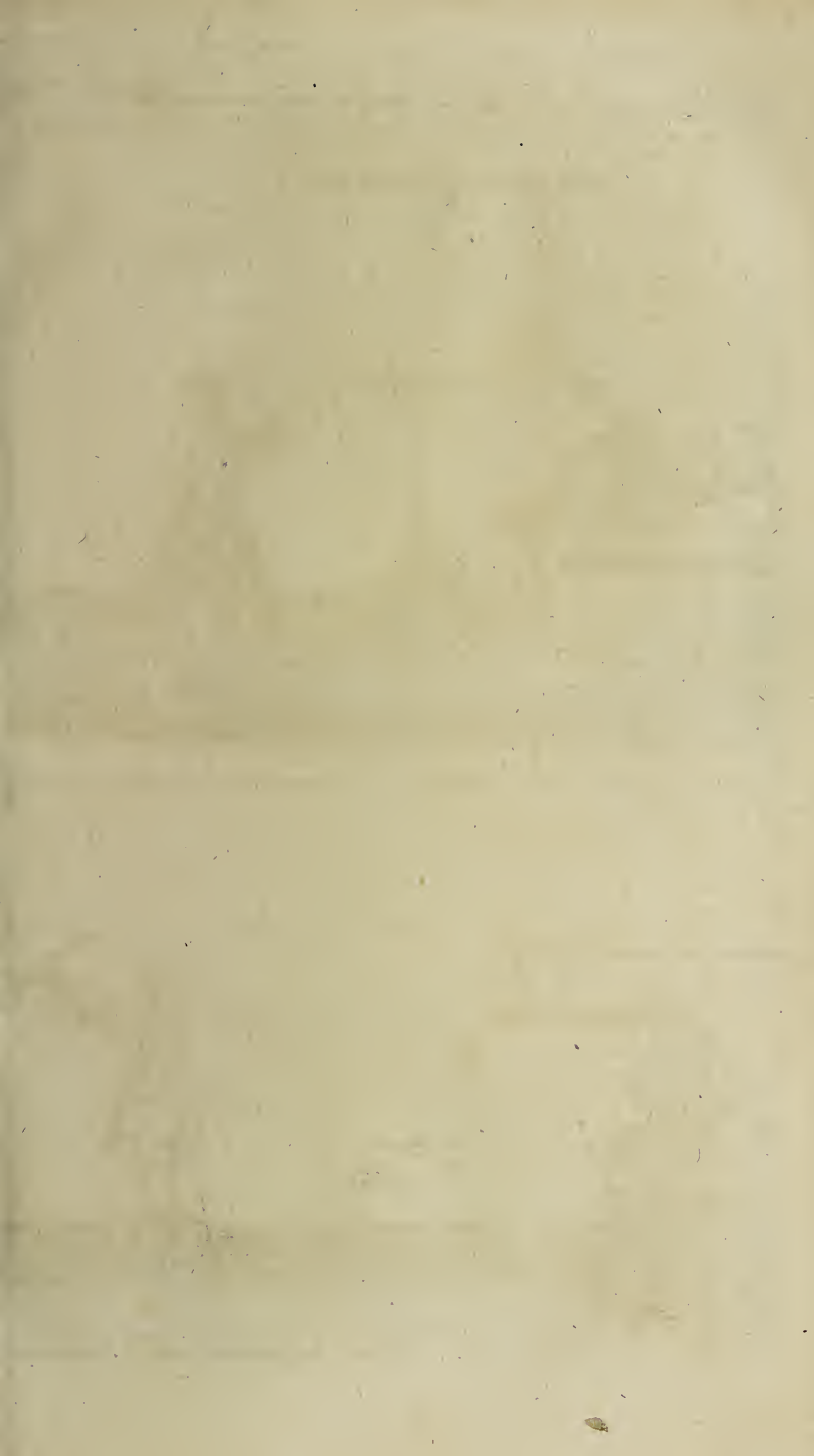
ELDER, a denomination still preserved in the Presbyterian discipline.

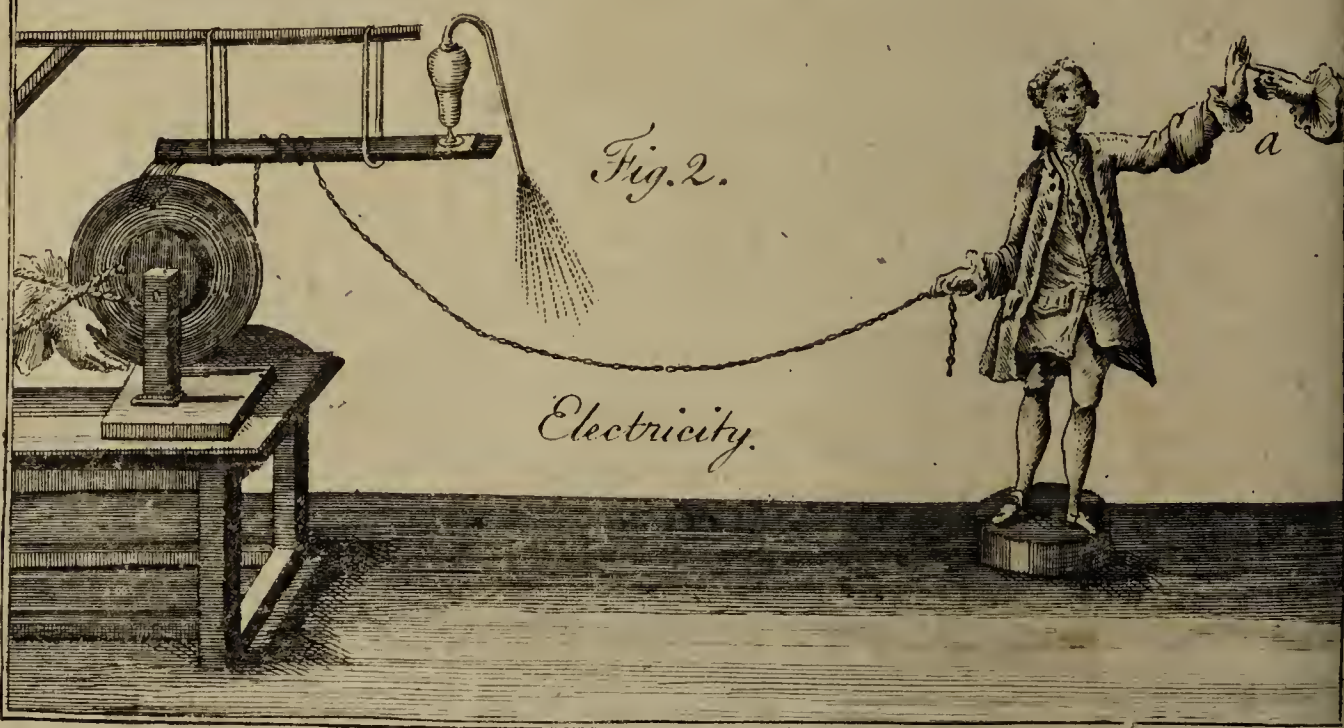
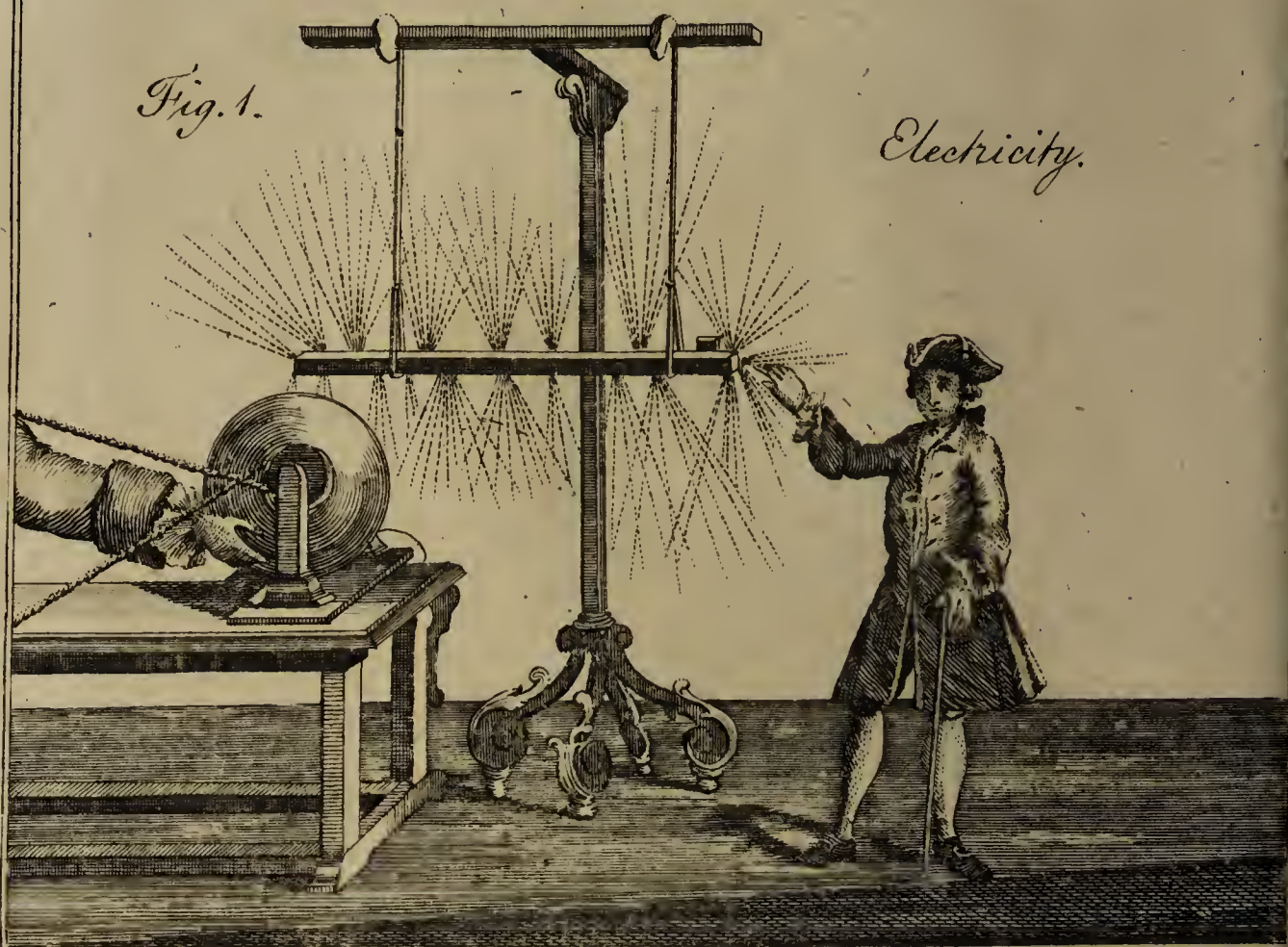
ELDER, in botany. See *Sambucus*.

ELECAMPANE, in botany, a large perennial plant, which grows wild in moist rich soils, and flowers in June. The root stands recommended as a diaphoretic, stomachic, for promoting expectoration in humoural asthmas and coughs, and for attenuating viscid juices in general and disposing them to excretion: taken freely, it is said to gently loosen the belly, and increase the urinary discharge. The dose of the dry root in substance is from a scruple to a dram or two.

ELECT, *Electi*, those whom God has chosen or predestinated to be saved. See *Predestination*.

ELEC,





ELECTION, the choice made of a person, or thing, in preference of any other; as, in the election of a pope, of members of parliament, &c.

ELECTION, the state of a person left to his own free will, to do one thing or another, which he pleases.

ELECTION, in theology, the choice which God, of his good pleasure, makes of angels and men for the objects of his grace and mercy.

ELECTOR, one who has a right to elect or choose another to an office, honour, &c.

* **ELECTORS**, the most distinguished persons of the German empire, who have the power of electing the emperor. The origin of this august assembly is unknown, and therefore we may conclude it was perfected by little and little. At the time of making the golden bull, there were seven electors, whence they were called the *Sep-temviri*. But within about an hundred years ago, the houses of Bavaria and Hanover have obtained that dignity, the former in 1623, and the latter in 1692, in-
somuch, that the number of electors now is nine, of which three are ecclesiastics, and six seculars; these are, 1. Mentz, 2. Treves, 3. Cologne, 4. Bohemia, 5. Bavaria, 6. Saxony, 7. Brandenburg, 8. the Palatinate, and, 9. Brunswick-Lunen-
burg. Whenever there is an assembly of the electors, that of Mentz pre-
sides, and takes the voices.

ELECTORATE, a term used as well to signify the dignity of, as the territories belonging to, any of the electors of Germany.

ELECTRICITY, a power or property in some bodies, as amber, sealing-wax, &c. whereby they attract light bodies.

The ancients have observed that amber, when it is rubbed, attracts bits of straw, down, and other light bodies. They call amber *electrum*; so that the name of electricity has been given to that property of attracting light bodies, which at first was thought peculiar to amber; but it has since been found to be in a vast many other kinds of substances, such as Spanish wax, gum copal, all the resins, and transparent bodies. Bodies susceptible of electricity are divided into two classes: the one are electrical of themselves, that is, they contain that quality in themselves, and need only be rubbed, to excite it: such are those already mentioned. The others do not contain that virtue in themselves; yet they acquire it by communication, or by ema-

nation derived to them from a body that is electrical *per se*. This second class of non-electrical bodies *per se*, are all those in general that are not comprised in the first class. Mr. Dufay has found, that the greatest part of the bodies of this second class may be raised to the condition of electrical bodies *per se*, by means of heating them briskly, or by using some other preparations; but by reason of these difficulties they are left in the number of non-electrical bodies *per se*.

For, about thirty-six years past, the learned in Holland, Germany, Italy, France, and England, have strove to distinguish themselves upon this head.

We shall confine ourselves to the principal circumstances of electricity, and pitch upon such experiments as are most proper to confirm these circumstances, and to discover their causes; and lastly, endeavour to account for this phenomenon.

We are not only certain, that a great number of substances, which the ancients did not suspect to be electrical, as amber is, attract, like it, light bodies: but farther we have discovered, that all these substances after they have attracted these bodies, do likewise repel them. So that hence alone we have in the phenomenon of electricity two contrary effects, attraction and repulsion. Afterwards, by rubbing electrical substances in a dark room, it has been found, that they emitted some sparks of light, and that thus the electrical body was a kind of phosphorus. Upon bringing the finger within a line or two of the electrical body, the finger not only drew a spark out of this body, but farther, this spark made a little noise, and caused a pretty lively pricking in the finger.

At last, curiosity led philosophers to examine, whether these effects of electricity might not be communicated to other bodies that were not naturally electrical, and they found that they were communicated to all bodies in general, except flame, and that at very great distances; and that it was almost the same cause with electricity as with sound and light.

These are the chief effects which, till the year 1745, were allowed to be in the phenomenon of electricity; namely, attraction, repulsion, the emanation of sparks, and the communication or propagation of all those effects.

Of Attraction, the first Effect of ELECTRICITY.—The most simple phenomenon of electricity is the attraction of light bodies by electrical or electrified bodies. This first property of electrical bodies is,

in the language of the ancients, the only phenomenon to which the term electricity corresponds. This is electricity itself, since this word signified formerly the attraction produced by amber and other bodies of the same nature: however, modern philosophy having discovered in these very substances the quality of repelling light bodies, as also that of producing light: and all these effects being naturally produced by the same cause; it is natural to call this general cause by the name of electricity, and to give these different effects the names of attraction, repulsion, &c. by joining thereto the epithet of electrical. The manner in which the phenomenon of electricity is excited, is as follows:

Get a tube about three feet and a half in length, an inch and a half in diameter, and its sides a line-thick; let this tube be very smooth and dry; rub it with a piece of stuff, paper, or, which is better still, with the hand, provided it be very dry. You will succeed still better, if your hands be rubbed with a little chalk or white lead; afterwards bring this rubbed tube near light bodies, such as gold-leaf, down, &c. laid upon a glass stand a foot high, and three or four inches broad at top, or hung upon linen or silk threads, situated perpendicularly in the open air. It is to be observed that these threads are called proof threads, because they obey the least electricity, and because they are made use of to examine if any matter be electrical. If it is a thread of linen or silk moistened, the down will always be attracted; but if it be a dry silk thread it will be attracted, and repelled alternately. But to return; the aforesaid bodies, as they approach the tube, will be thrown even upon it with rapidity. Choose for making these experiments a cold and dry season; for hot weather and a moist air are not favourable for them.

Of Repulsion, the second Effect of ELECTRICITY. After having rubbed the tube more violent than before, if you bring gold-leaf, down, or a peacock's feather near it, it will not only attract these light bodies, but afterwards repel them a great way off; and if you do this in such a manner that the gold-leaf, for example, be perpendicularly repelled above the tube, and that it meet with no other body, it will sustain itself in the air, always at the same distance from the tube, and you may convey it in this situation quite round the room; but if it touch any other body, it will come back and adhere to the tube;

then it will be repelled anew, as at the first. It often happens that the gold-leaf adheres to the tube, and is not repelled, especially if it fall flat upon it; and then you assist the repulsion by blowing upon it a little.

During the time that the gold-leaf is suspended in the circumference of the tube's atmosphere, if you present to it another non-electrified light body, it attracts it in the same manner as the tube itself would do; but if it be a heavy fixed body, it shall be attracted by that; and if two gold-leaves, having been repelled at the same time by the tube, come to meet, they will reciprocally repel each other in the same manner as the tube repels them.

M. Boze, professor of philosophy at Wittemburg, observing some inconveniences, in the use of the tube, introduced a globe of glass or of rosin.

The following are some of the principal experiments, that have been made therewith.

1. A long, pointed, piece of iron being laid on a frame of silken strings, with one end about a quarter of an inch from the globe, will, at the other end, which terminates in a conical point, emit a purple flame of electrical fire, diverging each way from the point, like the rays of the sun from the focus of a burning-glass in a darkened room. This pencil of electric rays is visible, even in the daylight, but is extremely so in the room made dark; and if the finger be held within a quarter of an inch, it causes the fire to issue out in a greater quantity, and to appear much more luminous than before. See plate XIX. fig. 1.

2. The finger, being placed as above directed, within a quarter of an inch of the said flame, will be sensible of a gentle blast of wind from the end of the iron; that is, the electrical fire will issue out of the point in such a manner, as to blow against the finger very sensibly; and if the finger be held still nearer, the large pencil of rays will be condensed in such a manner as to run out of the point upon the finger in a stream, or body, of dense yellow fire, and strike the finger like a gentle jet d'eau; and indeed the phenomenon may be truly called a jet de feu. This electric flame is sensible also to the smell, and much resembles, in that respect, the fire of phosphorus.

3. While the flame continues to appear from the point of the iron, the finger being placed any where upon the iron, the flame at the end disappears immediately;

if the finger be taken off, it again instantly appears; and so, by putting the finger off and on successively, the electric flame will appear and disappear alternately. The reason whereof is, that when the finger is applied, the electric virtue all runs off upon the finger, as a non-electric body, and therefore cannot go to the pointed end to produce the flame, as it does when the finger is taken off.

4. If a musket barrel, &c. be suspended, and the finger applied near it, as within the third of an inch, the fire will forcibly issue out, and strike it, and in striking it will give a very sensible snap; and several fingers being successively applied to the barrel, will cause several such eruptions and snappings of the fire, which will be all very sensible to the feeling, to the eye, and to the ear; and produce a most extraordinary and entertaining phenomenon.

5. If a chain or hempen cord be suspended by silken strings, all round the room, of any length you please, and one end thereof be hung by a loop across the barrel, the electrical fire will instantly be transmitted through the whole length of the chain, and appear upon every part at the approach of the finger, and be heard to snap, and strike with as great if not greater force, than from the gun-barrel itself. In this particular the electric fire seems to resemble that of lightning.

6. If a sponge, thorough dry, be hung on to the electrified barrel, it gives no appearance of fire, which shews it to be an electric substance; but if, when the sponge has been immersed in water, it be suspended to the barrel as before, and the finger or hand applied near it, the fire issues out with considerable force and snapping, and the drops which, before the sponge was electrified, fell very slowly, will now fall very fast; if the room be darkened, these drops will appear to be drops of fire, and illuminate the basin into which they fall.

7. If a capillary syphon be hung on to the small cup of water, at the end of the barrel, and the finger laid across the barrel to prevent the electric virtue going to the water, then, before the water is electrized, you observe the syphon to drop only, and that very gently; but when the finger is taken off, and the water becomes electrized, the syphon runs a stream; and if the room be dark, it issues from the syphon in the appearance of fire. See plate XIX. fig. 2.

8. If a phial of water be provided, and well corked, and a wire bended on the top be pierced through the cork, and thrust

down near the bottom of the phial, leaving the upper part standing about two or three inches above the bottle; then laying this wire on the globe in motion, the wire receives the electricity from the globe, and the water will be impregnated therewith, the more as the wire is kept longer on the globe; then the person thus holding the phial in one hand is to approach a finger of his other hand near the middle part of the globe, and he will receive the electric eruption of fire with a very considerable snap and force, greater by much than what proceeds from the barrel alone; the reason is, because all the electricity, running through the wire into the water, is there condensed, as it were, and confined by the electric substance of glass, and so acts in a greater quantity, and therefore with a greater force, than when it issues from the barrel unconfined.

9. A person standing on a large cake of rosin, at least three inches thick, holding a chain fastened to the gun-barrel, will be electrized, that is he will be all over possessed with the electric virtue, and at the same time feel nothing of it, unless some person standing by put his finger near to any part, and then the virtue will be emitted in form of fire from any part, and snap, and become very sensible to both the parties, but in a very innocent manner. See plate XIX. fig. 2.

10. The phial being electrified, as above, the whole company join hands, or communicate with each other by wires; then the operator, or person who stands first, at one extremity of the line, hangs the electrical phial on the barrel, when the person at the other extremity draws off the spark from the barrel; and at that instant all the company receive the shock, which they feel to their elbows, and in both their arms.

11. A person, standing on rosin, holding the chain from the barrel, points his finger to the warm spirits of wine, and by communicating the electric fire thereto, kindles the rising flame, and so sets the whole on fire. In this manner any sort of matter, which when warmed will send forth an inflammable vapour, may be soon and very easily set on fire.

12. If a load-stone, armed with iron, be hung on to the gun-barrel by an iron-wire, the electric virtue will rush out from every part, but more forcibly from the iron than from the stone itself; from the stone it seems to be emitted in a more lax manner, and diffused in a sort of stream or fiery vapour; whereas from the iron it

issues in a more impetuous, dense, and penetrating stream. By this experiment we see that the two most considerable powers of nature, electricity and magnetism, no ways interfere, or impede each other's action.

13. If the globe be exhausted of all its air, and then whirled about, the electricity will be observed to act wholly within the globe, where it will appear, in a darkened room, in form of a cloud, or flame of reddish or purple coloured light, filling the whole capacity of the globe. This volatile flame will be diminished and disappear by degrees, as the air is gradually admitted into the globe: the reason why the action of the electric virtues does not shew itself outwardly, is the strong repulsive power of the electric effluvium, and causing it to tend inwards, where it meets with no resistance in a vacuum sphere.

The above are the principal experiments usually performed: to which we shall add the following, as it is not generally known, and at the same time exhibits a very curious and uncommon phenomenon: Let two persons support a sword between them at the top of their fingers; that is, let both persons clasp all their fingers except the index, or fore-finger, and on the top of these place the guard of the blade, or that plate that separates the blade from the hilt; so that the point of the sword may hang down in a perpendicular direction towards the floor: then let one of the above persons rub with his other hand, the crystal of his watch, or small glass globe, bottle, &c. up and down his breast; and in a very short time the sword will begin to move in a circular direction on the two fingers that support it; and continue that motion as long as the person continues to rub the glass globe, crystal, &c.

From the above experiments it appears, that the force of the electric matter is very great: but nothing when compared with what may be called the celestial electricity; for it has been found, that the effects of lightning and those of electricity are similar. Lightning has been known to strike people blind, the electrical shock has had the same effect on animals. Animals have been killed by both. The mariner's compass has sometimes lost its virtue by lightning; and by Mr. Franklin's experiments it appears, that polarity may be given and reversed by electricity. The late Mr. Stephen Gray observed several years ago, that the electrical fire seemed to be of the same nature with that of thunder and lightning: others have since been of

the same opinion. And indeed it appears, from various experiments, that the flame of electricity has been justly called by Mr. Franklin, a mimic lightning, since it blinds and kills animals, and melts metals, &c. like natural lightning.

This analogy is now farther confirmed by the discovery made in France, in consequence of Mr. Franklin's hypothesis, of being able, by a proper apparatus, to collect the electricity from the atmosphere during a thunder-storm. For a pointed bar of iron, forty feet high, having been placed upon an electrical body, and a stormy cloud having passed over the place where the bar stood, those that were appointed to observe it drew near, and attracted from it sparks of fire, perceiving the same kind of commotions as in the common electrical experiments. The like effect followed, when a bar of iron ninety-nine feet high was placed upon a cake of rosin, two feet square, and two inches thick: for a stormy cloud having passed over the bar, where it remained half an hour, sparks were drawn from the bar. These were the first experiments made in France, and they have been sufficiently varied, and verified since; so that it seems now certain, 1. That a bar of iron, pointed or not, is electrified during a storm. 2. That a vertical or horizontal situation is equally fitting for these experiments. 3. That even wood is electrified. 4. That by these means a man may be sufficiently electrized to set fire to spirit of wine with his finger, and repeat almost all the usual experiments of artificial electricity: for such may that which is excited by friction be denominated.

It is, however, to be remarked, that these phenomena are attended with irregularities, and do not always succeed perfectly. Sometimes simple clouds, without thunder or lightning, produce more electricity than when there is loud thunder. Sometimes the electricity does not shew itself but where there is lightning: in other cases, the electricity, which seemed dissipated during the rain, began again as soon as the rain ceased, although the thunder was very distant.

Mr. Franklin has contrived a very ingenious and easy way of trying experiments of this kind by means of an electrical kite, made of a large thin silk handkerchief, extended and fastened at the four corners to two light strips of cedar, of sufficient length for this purpose. This kite, being accommodated with a tail, loop, and string, will rise in the air like those of paper. To

the

the top of the upright stick of the cross is to be fixed a very sharp-pointed wire, rising a foot more above the wood. To the end of the twine, next the hand, is to be tied a silk ribbon; and where the twine and silk join, a key may be fastened. The kite is to be raised when a thunder-gust appears to be coming on, and as soon as the thunder clouds come over the kite, the pointed wire will draw the electric fire from them, and the kite with all the twine will be electrified; and the loose filaments of the twine will stand out every way, and be attracted by an approaching finger. When the rain has wet the kite and twine, so that it can conduct the electric fire freely, it will stream out plentifully from the key on the approach of a man's knuckle. At this key the phial may be charged; and from electric fire thus obtained spirits may be kindled, and all the other electrical experiments be performed, which are usually done by the help of a rubbed glass, globe, or tube, and the sameness of the electric matter with that of lightning may thereby be completely demonstrated.

Laws, &c. of ELECTRICITY.—Mr. Ellicott, from carefully observing the various phenomena of electricity, thinks that the following conclusions, or general laws, may be justly deduced from the phenomena.

1. That these remarkable phenomena are produced by means of effluvia; which, in exciting the electrical body, are put into motion, and separated from it.
2. That the particles composing these effluvia strongly repel each other.
3. That there is a mutual attraction between these particles and all bodies whatsoever.

Mr. Watson has endeavoured to prove, that electricity is not furnished from the glasses employed in the experiments, nor from the circumambient air. He thinks that electricity is the effect of a very subtle and elastic fluid, occupying all bodies in contact with the terraqueous globe, and that every where in its natural state it is of the same degree of density; and that glass, and other bodies which are called electrics *per se*, have the power of taking this fluid from one body, and conveying it to another, in a quantity sufficient to be obvious to all our senses; and, that under certain circumstances, it is possible to render the electricity in some bodies more rare than it naturally is; and, by communicating this to other bodies, to give them

an additional quantity, and make their electricity more dense; and that these bodies will thus continue until their natural quantity is restored to each; that is, by those which have lost part of theirs, acquiring what they have lost, and by those to which more has been communicated, parting with their additional quantity. Both the one and the other of these is, from the elasticity of the electric matter, attempted to be done from the nearest non-electric; and when the air is moist, this is soon accomplished by the circumambient vapours, which here may be considered as preventing, in a very great degree, our attempts to insulate non-electric bodies.

Mr. Watson's system naturally leads him to ask, by what denomination shall we call this extraordinary power? From its effects in these operations, shall we call it electricity? From its being a principle neither generated nor destroyed; from its being every where and always present, and in readiness to shew itself in its effects, though latent and unobserved, till by some process it is produced into action, and rendered visible; from its penetrating the densest and hardest bodies; and its uniting itself to them; and from its immense velocity; shall we with Theophrastus, Boerhaave, Niewentiit, s'Gravesande, and other philosophers, call it elementary fire? Or shall we, from its containing the substance of light and fire, and from the extreme smallness of its parts, as passing through most bodies we are acquainted with, denominate it, with Homberg and the chemists, the chemical sulphureous principle, which, according to the doctrines of these gentlemen, is universally disseminated; Whatever we call it, it seems certain, that this power has many surprising properties, and cannot but be of great moment in the system of the universe.

ELECTROMETER, an instrument contrived to measure the force of electricity.

ELECTRUM, amber, in natural history. See the article *Amber*.

ELECTUARY, in pharmacy, a form, in which both officinal and extemporaneous medicines are frequently made. It may be considered as a number of bolusses united together, but made a little softer by the addition of a due proportion of syrups, &c.

ELEGANCE, or **ELEGANCY**, an ornament of politeness and agreeableness, shewn in any discourse, with such a choice of

of rich and happy expressions, as to rise politely above the common manners, so as to strike people of a delicate taste, and diffuse a relish which affects every body.

ELEGIT, in law, a writ of execution, which lies for a person who has recovered debt or damages; or upon a recognizance in any court, against a defendant that is not able to satisfy the same in his goods.

ELEGY, in poetry, primarily and generally a mournful poem.

As elegy, at its first institution, was intended for tears, it expressed no other sentiments, it breathed no other accents, but those of sorrow. With the negligence natural to affliction, it sought less to please than to move. By degrees, however, elegy degenerated from its original intention; and was employed upon all sorts of subjects, gay or sad, and especially upon love.

Ovid's books of love, the poems of Tibullus and Propertius, are entitled elegies; and yet so far are they from being sad, that they are sometimes scarce serious: so that the same title was indiscriminately given to poems on different subjects, but which agreed in their verse and manner of writing. The chief subjects to which elegy owes its rise, are Death and Love: so that elegy ought to be esteemed the most perfect, which has somewhat of both at once; namely, where the poet bewails the loss of some youth, or damsel, falling a martyr to love. The next are those elegies full of that melancholy complaint which lovers seldom want matter for: the thoughts of elegy should be always natural, far from the affectation of wit; its sentiments tender and delicate; its expression simple and easy, always retaining that alternate inequality of measure which Ovid extols so much; and which gives the elegiac poetry of the ancients so much the advantage over the moderns. Elegy should flow in one even current, smooth, humble, and unaffected; and yet she is not abject in her humility, but becoming, elegant, and attractive.

Among the ancients, hexameters and pentameters were so peculiar to elegy, that this kind of metre is usually stiled elegiac. Instead of it, we, in our tongue, use the word heroic.

ELEMENT, in physiology, a term used by philosophers to denote the original component parts of bodies, or those into which they are ultimately resolvable.

The elements of Aristotle were four, earth, water, air, and fire.

Concerning the true elements of nature, the incomparable Sir Isaac Newton thus explains himself in his Optics: "It seems probable to me, that God in the beginning formed matter in solid, massy, hard, impenetrable, moveable particles, of such signs and figures, and with such other properties, and in such proportion to space, as most conduced to the end for which he formed them; and that these particles, being solid, are incomparably harder than any porous bodies compounded of them; even so very hard, as never to wear or break in pieces, no ordinary power being able to divide what God himself made one in the first creation. While the particles continue entire, they may compose bodies of one and the same nature and texture in all ages: but, should they wear away, or break in pieces, the nature of things depending on them would be changed. Water and earth composed of old worn particles, and fragments of particles, would not be of the same nature and texture, now, with water and earth composed of entire particles in the beginning: and therefore, that nature may be lasting, the changes of corporeal things are to be placed only in the various separations and new associations and motions of these permanent particles; compounded bodies being apt to break, not in the midst of solid particles, but where those particles are laid together, and only touch in a few points."

The chemical elements or principles to which all bodies may be ultimately reduced; are these five: 1. Water, or phlegm, which, in the chemical analysis of them, rises first in form of vapour. 2. Air, which escapes unseen in great quantities from all bodies, so as to constitute half the substance of some of them. 3. Oil, which rises after, and appears swimming on, the surface of the water. 4. Salt, which is either volatile, or rises in the still, as that of animal substances; or fixed, as that of vegetables, which is obtained by reducing them to ashes, making a lixivium or ley of these, and afterwards evaporating the moisture; by which means the salt shoots into crystals. 5. Earth, or what is called *caput mortuum*, being what remains of the ashes after the salt is extracted. This is the last element of all bodies, which can be no farther altered by any art whatsoever. See *Water*, *Air*, &c.

ELEMENT, in a figurative sense, the principles and foundations of any art or science, as Euclid's Elements, &c.

ELEMI,

ELEMI, or **ELEMY**, a resin of Asiatic origin: the plant which produces it is not as yet known with certainty. There is also an inferior kind, brought from America, which is the only one now to be met with in the shops: the parent of this sort is called by Ray, *Arbor Brasiliensis gummi elemi simile fundens*, &c. a Brazilian tree, yielding a gum like elemi, with winged leaves, verticillate flowers, and a fruit about the size and shape of an olive. This resin has hitherto been employed only in external applications; in nervine, vulnerary, and digestive plasters and balsams. In making these kinds of compositions, we must be careful to avoid too great a degree of heat and mixing the ingredients; lest the essential oil, the most useful part of the elemi, be lost.

ELENCHUS, in logic, a sophism, or fallacious argument, to deceive the hearer under the appearance of truth.

ELEPHANT, *Elephas*, in zoology, a genus of quadrupeds, of the order of the jumenta, the characters of which, according to Linnæus, are these: it has no fore-teeth; the upper canine, or dog-teeth, are considerably long: it has a very long flexible proboscis or trunk, and two paps placed on the breasts.

The teeth of this animal is what we call ivory.

The elephant, of which there is only one known species, is, when full grown, from seventeen to twenty feet high; and its body is so enormously bulky, that the belly reaches nearer the ground than could easily be conceived of a creature of its height. The trunk is, properly speaking, nothing but the nose continued to a great length; its substance is fleshy, but firm, being composed of three series or orders of fibres: this trunk the creature can contract or protrude forward with great violence, from the length of one foot to five or more.

Knights of the ELEPHANT, an order of knighthood in Denmark, conferred upon none but persons of the first quality and merit.

ELEPHANTIASIS, or **ELEPHAS**, in medicine, a species of leprosy, so called, because it affects the legs in such a manner, as to make them appear like those of an elephant.

ELEPHANTOPUS, bastard scabious, in botany, a genus of plants.

ELEVATION, the same with altitude, or height. See *Altitude*.

Angle of ELEVATION, in gunnery, that comprehended between the horizon

and the line of direction of a cannon or mortar.

ELEVATION, in architecture, the same with an orthographic, or upright draught of a building.

ELEVATION of the *Host*, in the church of Rome, that part of the mass where the priest raises the host above his head for the people to adore.

ELEVATOR, in anatomy, the name of several muscles, so called from their serving to raise the parts of the body to which they belong. See *Muscle*.

The elevator of the eye-lids has sometimes the epithet *superbus*, as being used when people put on a haughty or high look.

ELEVATOR, in surgery, an instrument to elevate or raise bones, as in fractures of the skull, &c.

ELEVE, a French term, a disciple or scholar.

ELEUSINIA, in Grecian antiquity, a festival kept in honour of Ceres, every fourth, by some states, but by others, every fifth year. The Athenians celebrated it at Eleusis, a town of Attica, whence the name.

ELEUTHERIA, another festival celebrated at Platæa, by delegates from almost all the cities of Greece, in honour of Jupiter Eleutherius, or the assertor of Liberty.

ELISION, in grammar, the cutting off a vowel at the end of the word, for the sake of sound, or measure, the next word beginning with a vowel.

Elisions are frequently met with in English poetry, but more frequently in the Latin, French, &c. They chiefly consist in suppressions of the *a*, *e*, and *i*, though an elision suppresses any of the other vowels.

ELIXATION, in pharmacy, the extracting the virtues of ingredients by boiling or stewing.

ELIXIR, a compound tincture extracted from many efficacious ingredients. Hence the difference between a tincture and an elixir seems to consist in this, that a tincture is drawn from one ingredient, sometimes with an addition of another to open it, and dispose it to yield to the menstruum; whereas an elixir is a tincture extracted from several ingredients at the same time.

* **ELIZABETH**, queen of England, daughter of Henry VIII. and Anna Bolleyn, was born on the eighth of September, 1533, and when she came to the crown,

crown, on the 17th of November, 1558, was wavering between the two religions, but at last, chose the reformed. She assisted the distressed States of Holland, defeated the formidable armada of Spain, encouraged the navigation of England, and spread her fame to the most distant parts of the earth. The papists represent her as a monster of cruelty, avarice, and lasciviousness; which is not to be wondered at considering her severity to them. Yet pope Sextus had a particular esteem for her, "Your queen, said he to an Englishman, is born fortunate. She governs her kingdom with great happiness, and wants only to be married to me, to give the world a second Alexander the Great." It is indeed difficult to excuse her beheading Mary queen of Scots, and the severity she sometimes made use of both against the papists and the protestant dissenters. She however understood the art of reigning in an eminent degree, and her reign was the school of able ministers, great statesmen, and distinguished warriors. She understood the Greek, Latin, French, Spanish, and Dutch languages: had a deep and penetrating, a noble and elevated mind. Yet her glorious reign, on which providence for a long time poured innumerable blessings, ended in a most dismal melancholy, which, some are of opinion, was occasioned by the death of the earl of Essex, whom she had caused to be beheaded. This queen makes a considerable figure among the learned ladies. Besides variety of other things, she wrote a Comment on Plato, and translated into Latin two of the Orations of Isocrates, and a play of Euripides, &c. She died on the 3d of April, 1603, aged seventy, in the forty-fifth year of her reign.

* ELIZABETH, queen of England, character of. She had pardoned Tyrone with such reluctance, that many people imagined her last illness was produced from her chagrin at that event. It must be owned, however, she had many more powerful causes of grief, and mortification. She was very loath to relinquish the pleasures of life and royalty. She endeavoured to conceal the ravages which time had made upon her constitution, even from her own knowledge. She affected an extravagant gaiety both in her dress and diversions, and even engaged in a childish intercourse of love with the earl of Clarendon, a young Irish nobleman, who resembled Essex in his personal qualifications,

but he did not meet her advances with equal warmth, and for that reason the intercourse was soon laid aside. She tried to divert her attention from disagreeable objects, by hunting, tournaments, and parties of pleasure: but, in spite of all her endeavours, she was seized with the horrors of melancholy. She became peevish, pensive, silent, and sighed and wept insensibly. Perhaps the faculties of her mind were impaired by long and violent exercise. Perhaps she reflected with remorse upon some actions of her life, which were contrary to humanity, candour and good morals. She had just lost a friend and confidant in the countess of Nottingham; she had been thwarted by her ministry and council in the affair of Tyrone; she found her constitution decaying; she foresaw, through the exaggerating mist of jealousy, her courtiers and dependants, shrinking away in the evening of her life, in order to recommend themselves to her successor; and her indignation against the unfortunate Essex having subsided, she lamented his fate, remembering nothing of him but the amiable side of his character, and the pleasure she had enjoyed in his conversation. Such a concurrence of causes joined to the infirmities of her body, was more than sufficient to plunge her into an abyss of despondence. She lost her appetite, and could enjoy no repose: feeling a perpetual heat in her stomach, attended with an unquenchable thirst, she drank without ceasing, but refused the assistance of her physicians. When the archbishop of Canterbury, secretary Cecil, and others of her council, intreated her on their knees to take what was necessary for her sustenance and relief, she peevishly replied, that she knew her own constitution and was in no danger. At length, teized by their intreaties, she desired they would let her die in quiet. Her melancholy and distemper gaining ground, Cecil and the lord admiral desired to know her sentiments with regard to the succession; and she said, as the crown of England had always been held by kings, it ought not to devolve upon rascals, but upon her immediate heir the king of Scotland. Having continued sitting upon cushions for ten days, without closing an eye, or uttering a syllable, she was put to bed partly by force, and seemed to revive a little: she heard some pious meditations, and joined in prayer with the archbishop of Canterbury. After she was deprived

of her speech, the noblemen of her council desired she would give some token of her approving the Scottish monarch as her successor ; and she laid her hand upon her head as a mark of approbation. On the 24th day of March, about two o'clock in the morning, she expired.

She had given orders that her corpse should not be touched or seen by any person but her own women : it was therefore not exposed to public view ; but being conveyed from Richmond, where she died, to Whitehall, was interred in the chapel of Henry the Seventh, at Westminster, with great magnificence.

Elizabeth, in her person, was masculine, tall, straight, and strong limbed, with an high round forehead, brown eyes, fair complexion, fine white teeth, and yellow hair. She danced with great agility ; her voice was strong and shrill ; she understood music, and played upon several instruments. She possessed an excellent memory, understood the dead and living languages, had made good proficiency in the sciences, and was well read in history. Her conversation was sprightly and agreeable, her judgment solid, her apprehension acute ; her application indefatigable, and her courage invincible. She was the great bulwark of the protestant religion : she was highly commendable for her general regard to the impartial administration of justice ; and even for her rigid œconomy, which saved the public money, and evinced that love for her people, which she so warmly professed : yet she deviated from justice in some instances, when her interest or passions were concerned ; and notwithstanding all her great qualities, we cannot deny she was vain, proud, imperious, and in some cases cruel. Her predominant passions were jealousy and avarice ; though she was also subject to such violent gusts of anger as overwhelmed all regard to the dignity of her station, and even hurried her beyond the bounds of common decency. She was wise and steady in her principles of government ; and, above all princes, fortunate in a ministry. Her vanity appeared in the love of flattery, which she greedily swallowed even when it was fulsome and absurd ; and in the variety and richness of her apparel, which she continued to wear even in her old age. Her behaviour to Sir James Melvil, when he came as ambassador from Mary queen of Scots, was altogether childish. Under-

standing that he had been a traveller, she shifted her dress every day, that he might tell which kind of habit became her best. She asked whether she or his queen was the fairer, the taller, and the better dancer ; and when he said that Mary was taller than her highness, she answered, that then Mary was too high, for she herself was neither too high nor too low. She directed the lord Hunsdon to conduct Melvil, as if by accident, into a gallery, where he should hear her play upon the virginals. He guessed the contrivance, and without leave entered her apartment. Then she desired to know whether she or his mistress was the better musician. In order to display her learning, she spoke to him in the French, High Dutch, and Italian languages ; and detained him two days, until he should see her dance a saraband. Her cruelty and jealousy were too conspicuous in the fate of the duke of Norfolk and Mary queen of Scots. Of avarice and parsimony, she exhibited numberless proofs, in extorting presents from noblemen, on pretence of visiting them at their houses : in allowing her ambassadors in foreign countries to live at their own expence, until some of them were ruined ; and of carrying on the war against Spain at the charge of private adventurers. When she died, besides a vast quantity of plate and jewels, she left three thousand robes, none of which she had the liberality to distribute among the servants. She raised one hundred thousand crowns yearly, by granting licences to Roman catholics and non-conformists, exempting them from the penalty inflicted by law upon those who did not regularly attend divine worship. She exacted every new-year's day above sixty-thousand crowns in gifts from her dependants. She entertained spies in all the houses of the nobility, encouraged informers, introduced the use of tortures, enacted a great number of penal laws ; and by the terror of her suspicion, which was generally fatal to the subject, drove many gentlemen into exile, that she might prosecute them to confiscation, and enjoy their estates. Her choleric disposition prompted her often to revile foreign ambassadors, in the grossest terms ; to insult her ministers and subjects in the most abusive language, and even to chastise her female attendants, with her own hand. On such occasions she used to utter oaths and imprecations in the most vulgar stile ; and the ladies of her court

did not scruple to follow her example. Her great art consisted in cajoling her parliament and people with the most flattering carcasses, the sincerity of which they could not doubt, when they found themselves rich and happy under her administration.

ELK, *Alce*, in zoology, an animal of the deer-kind, with the horns palmated, and without a stem. It is a native of the northern parts of Europe; and is a very large and strong animal, being equal in size to a horse.

ELL, *Ulna*, a measure of length, different in different countries: but those mostly used in England, are the English and Flemish ells; the former of which is three feet nine inches, or one yard and a quarter, and the latter only twenty-seven inches, or three quarters of a yard. In Scotland, the ell contains 37 2-10th English inches.

ELLIPSIS, or ELLIPSE, in geometry, a figure produced from the section of a cone, vulgarly called an oval. See *Conic Sections*.

As the rectangle of any two abscissæ: is to the square of half the ordinate which divides them: so is the rectangle of any two abscissæ: to the square of half that ordinate which divides them.

ELLIPSIS, in grammar and rhetoric, a figurative way of speaking, by which some word in a discourse is retrenched, or omitted, when some violent passion will not let a person utter what he thinks.

ELLIPTIC, or ELLIPTICAL, belonging to an ellipsis.

ELLIPTICAL ARCH, a part or segment of the curve of an ellipsis. Elliptical arches are frequently preferred to those that are circular in various kinds of buildings, because their span may be equal to those of the circle, without rising to so great a height; therefore they have been preferred in bridges: but it must be remembered that they will decrease in strength, in proportion as they deviate from the circle. See *Bridge*.

ELLIPTOIDES, in geometry, a name used by some to denote infinite ellipses, defined by the equation $aym + n = bx^m$ ($a - xn$).

There are several species of elliptoides; as for instance, if $ay^3 = bx^2$ ($a - x$) it is a cubical elliptoid; and if $ay^4 = bx^2$ ($a - x^3$) it denotes a biquadratic elliptoid, which is an ellipsis of the third order, with respect to the Apollonian ellipsis.

ELM, *Ulmus*, in botany, a genus of trees. These are very proper to plant in

hedge-rows, upon the borders of fields, where they will thrive much better than when planted in a wood, or close plantation; and their shade will not be very injurious to whatever grows under them; but when these trees are transplanted out upon banks after this manner, the banks should be well wrought and cleared from all other roots, otherwise the plants, being taken from a better soil, will not make much progress in these places. About Michaelmas will be a good time for this work, for the reason before assigned; but when they are planted, there should be some stakes fixed in by them, to which they should be fastened, to prevent their being displaced by the winds; and part of their heads should be taken off, before they are planted, which will also be of use in preventing their being easily overturned by winds; but by no means should their leading shoot be stopped; nor their branches too closely cut off; for, if there are not some shoots left to draw and attract the sap, they will be in danger of miscarrying.

In planting these trees, great care should be taken not to bury their roots too deep; which is very injurious to them, especially if they are planted on a moist loam or clay; in which case, if the clay is near the surface, it will be the best way to raise the ground in an hill, where each tree is to be planted, which will advance their roots above the surface of the ground, so that they will not be in danger of rotting in winter with moisture.

When these trees are propagated by suckers taken from the foot of old trees, they are commonly laid into the ground very close in beds, where, in dry weather, they may be frequently watered, to encourage their putting out roots. In these beds they are left two years; by which time those that live will be well rooted; though a great many of them generally die; then they should be transplanted into the nursery.

The timber of the common English elm is generally preferred to the rest; though that of the witch elm is often as good, and is the largest tree when planted on a kindly soil: but the Dutch elm affords the worst timber, and never will grow to the stature of either of the other sorts; so that this should not be cultivated for the timber; therefore the best way to be sure of the kinds which a person would choose to propagate, is to have a nursery of stools, in order to furnish layers; for when they are grubbed up from hedge-rows, there will often be many sorts

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intermixed, especially if the people who go about for that purpose, furnish them; because they take them indifferently, wherever they can be procured; so that when they are planted out thus blended together, there will be a considerable difference in their growths, which will deface the plantation.

ELOCUTION, in rhetoric, the adapting words and sentences to the sentiments to be expressed. It consists in elegance, composition, and dignity. The first, comprehending the purity and perspicuity of a language, is the foundation of elocution, the second ranges the words in proper order; and the last adds the ornaments of tropes and figures to give strength and dignity to the whole.

ELOGY, *Elogium*, a praise or panegyric bestowed on any person, &c. The beauty of elogy consists in an expressive brevity. Elogiums should strictly adhere to truth; for extravagant and improbable elogies rather lessen the character of the person or thing they would extol.

ELONGATION, in astronomy, the removal of a planet to the farthest distance it can be from the sun, as it appears to an eye placed on the earth.

The utmost elongation of Venus can be but 45 degrees; and that of Mercury but 30 degrees; which is the reason this planet is so rarely seen.

ELOPEMENT, in law, is where a married woman departs from her husband, and cohabits with an adulterer; in which case the husband is not obliged to allow her any alimony out of his estate, nor is he chargeable for necessaries for her of any kind. However, the bare advertising a wife in the Gazette, or other public papers, is not a legal notice for persons in general not to trust her; tho' a personal notice given by the husband to particular persons, is said to be good. An action lies, and large damages may be recovered, against a person for seducing, carrying away and detaining another man's wife.

ELOQUENCE, the art of speaking well, so as to affect and persuade. Cicero defines it the art of speaking with copiousness and embellishment.

Eloquence and rhetoric differ from each other, as the theory from the practice; rhetoric being the art which describes the rules of eloquence, and eloquence that art which uses them to advantage. However, they are frequently used indiscriminately for each other.

ELUL, one of the Hebrew months, answering nearly to our August. There

E M B

are but twenty-nine days in it. It is the twelfth month of the civil year, and the sixth of the ecclesiastical. Upon the seventh or ninth day of this month the Jews fast, in memory of what happened after the return of those who went to view the promised land.

* **ELY**, a city in Cambridgeshire, seated in the fenny part of the country, on the river Ouse, which renders the air unhealthy. It has a handsome cathedral. The buildings are but mean, and the inhabitants not numerous. It has a market on Saturdays, and is governed by a mayor. The fairs are on Holy-Thursday, for horses; on the Thursday of the week St. Luke's-day falls in, which is October 18, for horses, cheese, and hops. It is with the territory about it, which includes Wisbech, and most parts round it, a territory of itself; and has a judge who decides all causes, criminal and civil, within its limits, and is the see of a bishop. It is seventeen miles north of Cambridge, and sixty-eight north of London. It has a free-school for twenty-four boys, and two charity-schools, the one for forty boys, and the other for twenty girls, which are maintained by subscription. Long. o. 15. E. Lat. 52. 24. N.

ELYSIUM, or **ELYSIAN FIELDS**, in heathen mythology, certain plains abounding with woods, fountains, verdure, and every delightful object; supposed to be the habitation of heroes and good men, after death.

EMANCIPATION, in the Roman law, the setting free a son from the subjection of his father: so that whatever moveables he acquires, then belong in propriety to him, and not to his father.

EMARGINATED, among botanists, an appellation given to such leaves as have a little indenting on their summits: when this indenting is terminated on each side by obtuse points, they are said to be obtusely emarginated; whereas when these points are acute, they are called acutely emarginated.

EMBALMING, the opening a dead body, taking out the intestines, and filling the place with odoriferous and desiccative drugs and spices, to prevent its putrifying.

EMBARGO, in commerce, an arrest on ships, or merchandize, by public authority; or a prohibition of state, commonly on foreign ships, in time of war, to prevent their going out of port; sometimes to prevent their coming in, for a limited time.

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EMBER-WEEKS, or DAYS, in the Christian church, certain seasons, set apart for the imploring God's blessing, by prayer and fasting, upon the ordinations performed in the church at such times.

These ordination fasts are observed four times in the year, viz. the Wednesday, Friday, and Saturday after the first Sunday in Lent, after Whit-sunday, after the fourteenth of September, and the thirteenth of December; it being enjoined, by a canon of the church, that deacons and ministers be ordained, or made, only upon the Sundays immediately following these ember-fasts.

EMBLEM, a kind of painted ænigma, or certain figures delineated metaphorically, expressing some action, with reflections underneath, which in some measure explain the sense of the device, and at the same time instruct us in the moral truth, or other matter of knowledge. The emblem is somewhat plainer than the ænigma. The Greeks gave this name to inlaid or Mosaic works, and to all kinds of ornaments of vases, garments, &c. and the Latins used emblem in the same sense. The invention of emblems is certainly modern; they were entirely unknown to the ancients.

EMBOLISMUS, the excess of the solar year above the lunar, whereby the lunations happen every subsequent year eleven days sooner than in the foregoing, which, when they amount to thirty days, make a new month, called the embolismical lunation, or embolismatical month; which must be added to make the common lunar year equal to the solar.

EMBOLUS, the moveable part of a pump, or syringe, called also the piston, or sucker. See the article *Piston, Pump, Syringe, &c.*

EMBOSSING, or IMBOSSING, in architecture and sculpture, the forming or fashioning works in relieve, whether cut with a chissel, or otherwise.

EMBRASURE, in architecture, the enlargement made of the aperture of a door or window on the inside of the wall; its use being to give the greater play for the opening of the door, or casement, or to admit the more light. When the wall is very thick, they sometimes make embrasures on the outside.

EMBRASURE, in fortification, a hole or aperture in a parapet, through which the cannon are pointed.

Embrasures are generally twelve feet distance from one another, every one of

E M E

them being from six to seven feet wide without, and about three within: their height above the platform is three feet on that side towards the town, and a foot and a half on the other side towards the field; so that the muzzle may be sunk on occasion, and the piece brought to shoot low.

EMBROCATION, in surgery and pharmacy, an external kind of remedy, which consists in an irrigation of the part affected, with some proper liquor, as oils, spirits, &c. by means of a woollen or linen cloth, or a sponge, dipped in the same. The use of embrocation is either to attenuate and dislodge something obstructed underneath the skin, to ease pains, or to irritate the part into more warmth and a quicker sense of feeling. The pumping used in natural baths is properly an embrocation.

EMBROIDERY, a work in gold, or silver, or silk thread, wrought by the needle upon cloth, stuffs, or muslin, into various figures. In embroidering stuffs, the work is performed in a kind of loom.

EMBRYO, in physiology, the first rudiments of an animal in the womb, before the several members are distinctly formed; after which period it is denominated a foetus.

EMBRYO PLANT. See *Plantula*.

EMBRYULCUS, a hook for extracting the child in difficult labours.

EMERALD, *Smaragdus*, in natural history, the most beautiful of all the class of coloured gems, when perfect. It is found sometimes in the roundish or pebble form, sometimes in the columnar or crystalline one; the pebble emeralds, however, are the most valued. The pebble emeralds are found loose in the earth of mountains, and in the beds of rivers; the crystalliform ones are usually met with adhering to a white, opaque, crystalline matter, though sometimes to pieces of jasper or of the prasus, a coarser and softer gem of the same colour, only with some tinge of a yellowish cast, and called the root of the emerald. The pebble emeralds are in their natural state bright and transparent, though less glossy than the columnar ones; both are always of a perfect and pure green. It has this green in all the different shades, from very dark to extremely pale, and is sometimes entirely colourless, though then the English jewellers call it white sapphire. Emeralds are found in the East-Indies, and in many parts of America, particularly about the gold mines of Peru; they are also met with

E M E

with in Silesia, Bohemia, and in some other parts of Europe; but they are very different in lustre and value, as they come from these different parts. The Oriental emeralds are of equal hardness with the sapphire; those of Peru are of much the same hardness with the garnet, and therefore of proportionably less beauty than the Oriental; as to those of the several parts of Europe, they are but little harder than the crystal; but when they are not harder than that stone, they are not emeralds at all, but only crystals tinged green by copper, and usually found in mines of that metal. These are very beautiful, but vastly inferior to the very worst of emeralds in hardness. The Oriental emeralds are at present found only in Cambay, and are there very scarce, and few of late have been imported into Europe; the princes of that part of the world being themselves very fond of them; large quantities of the finest emeralds in the world are to be seen among their regalia. What we see at the English jewellers under the name of oriental emeralds are all from Peru, and many of them very beautiful; they are found in the mountains over the gold mines, among a dusky greyish earth that fills up the perpendicular fissures of the strata of the earth, and sometimes adhering to the sides of those fissures in their crystalline shape.

The emerald is of the number of those gems that owe their colour to the metal-line sulphurs; and therefore lose it in the fire, becoming colourless as crystal; though still very hard and of a fine lustre. The English druggists sell us, under the name of this gem, fragments of coloured crystals and spars, which are found in abundance about the mines of copper and iron. It is very certain indeed that the emerald owes its colour to the former of these metals, because the factitious pastes, or glasses may be coloured to a true smaragdine hue by copper; but it does not follow that all the green crystals and spars have the particles of the same metal in the same proportion, or that they have not also other particles very improper to be given internally.

It will stop hæmorrhages and diarrhœas, and sweeten or obtund the too acrid humours: but as this is recorded of the emerald, as found among the druggists, it belongs rather to the crystal than to the gem. And perhaps it would be better for the world if both this and the other fragments of the gems were banished from the com-

E M E

positions in which they are ordered, and common crystal used in their stead.

To counterfeit EMERALDS. Take of natural crystal, four ounces; of red lead, four ounces; verdigrise, forty-eight grains; crocus martis, prepared with vinegar, eight grains; let the whole be finely pulverised and sifted; put this into a crucible, leaving one inch empty; lute it well, and put it into a potter's furnace, and let it stand there as long as they do their pots. When cold, break the crucible, and you will find a matter of a fine emerald-colour, which, after it is cut and set in gold, will surpass in beauty an Oriental emerald.

EMERSION, in philosophy, is the rising of any solid above the surface of a fluid, especially lighter than itself, into which it had been violently immersed or thrust.

EMERSION, in astronomy, the time when any planet that is eclipsed, begins to emerge or get out of the shadow of the eclipsing body.

EMERUS, *Scorpion Sena*, in botany, a genus of plants.

These shrubs are easily propagated by sowing, their seeds, which they commonly produce in great plenty, in March, upon a bed of light sandy earth, observing to keep the bed clear from weeds; and in very dry weather you must often refresh the bed with water, which should be given carefully, lest the seeds should be washed out of the ground by hasty watering. It delights in a dry soil, and may also be propagated by laying down the tender branches; which take root in about a year's time, and may then be transplanted into a nursery, and managed in the same manner as the seedlings. *Miller's Gard. Dict.*

EMERY, *Smiris*, *Smerillus*, *Smyrites*, so called from the Greek, signifying to cleanse or polish, a species of stone of which there are three sorts mentioned by authors; a golden, a cupreous, and a ferrugineous emery. The golden emery is said to be found in the Peruvian and other American mines, to be of a reddish colour, to have small veins or specks of gold and silver imbedded in it, to be very rare, and its exportation to be prohibited by the king of Spain: the cupreous sort to be likewise reddish, but more equal and free from veins, to hold no gold or silver, and to be found in copper mines in Europe: the ferrugineous, to be of a sparkling whitish, a dark grey, or a blackish colour, to be found

E M E

found in rich iron mines, and to be the least valuable sort.

The common emery, whatever be its colour, whether reddish, greyish, or blackish, is a compact stone, so hard as to cut glass like the diamond; impregnated with iron, and a very small quantity of copper. It is met with in Norway, Sweden, England, Saxony, and other countries. It is used for cutting and polishing precious stones, for polishing agate, porphyry, marble, glass, metalline specula, iron and steel, and the various utensils and ornaments made of these kinds of substances: for these purposes the emery is ground in mills, the powder passed through sieves of different degrees of fineness, and thus divided into different sorts, the finest of which, for the nicer uses, are further divided by washing them over several times with water. The refuse emery, in grinding, or such as has been used in polishing, is, in France, dried and kept apart, under the name of *potée d'emery*. Some have employed powdered emery, from its power of polishing hard stones, as a dentifrice: but for this use it is by no means proper, as it wears off the natural polish of the teeth.

EMETICS, *Emetica*, medicines which induce vomiting.

Emetics are either mild and gentle, or of a more strong and drastic quality. The milder sort were principally used by the ancients, since they are safe, and generally, by their quantity, stimulate the stomach to vomit; especially when it is weak. But these do not act beyond the limits of the stomach, from which they very advantageously evacuate crude, phlegmatic, and bilious humours, produced by improper aliments, or a bad digestion.

The more strong and drastic emetics, when exhibited in a small dose, by their fine, caustic, saline-sulphureous acrimony, act not only on the nervous coat of the stomach and intestines, but spasmodically constricting them; but if exhibited in a somewhat larger dose, they penetrate beyond the stomach, into the highly nervous biliary ducts into the glands of the intestines, mesentery, and pancreas, as also into the liver, and expel their contained humours from these parts. Sometimes also they affect the whole nervous system, and prove highly injurious to the constitution.

It is proper, in order to make emetics work more easily, to exhibit them always in a liquid form, or in a sufficient quan-

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tity of some moistening, relaxing, and pinguious vehicle: for vomiting not only requires a powerful constriction of the pylorus and bottom of the stomach, but also a relaxation of the superior orifice of the oesophagus.

Sydenham lays it down as a rule, that whenever a vomit and bleeding are necessary, bleeding should always precede the exhibition of an emetic.

Common salt is used to check the operation of emetics; which it will certainly do, and make them run off by stool: violent vomitings are also stopped by copious draughts of warm diluting fluids, by mild oils, by opiates, aromatics, by grateful acids, and corroborating medicines, either taken internally, or applied externally to the region of the stomach.

EMINENCE, a title of honour peculiar to cardinals.

EMINENCE, in the military art, a rising ground, which overlooks and commands the low places about it; such places within cannon-shot of a fort, are a great disadvantage; for if the besiegers become masters of them, they can, from thence, fire into the fort.

EMINENTIAL EQUATION, an artificial equation, containing another equation eminently: it is sometimes used in the investigation of the areas of curved lined figures. See *Equation*.

EMISSARY, in a political sense, a person employed by another to sound the opinions of people, spread certain reports, or act as a spy over other people's actions.

EMMENAGOGUES, **EMMENAGOGA**, in physic, medicines which promote the menses.

Emmenagogues do this, either by giving a greater force to the blood in its circulation, whereby its momentum against the vessels is increased; or by making it thinner, whereby it will more easily pass through any outlets. The former intention is helped by chalybeates and all other substances of the like gravity and elasticity; and this is the case of a leucophlegmatic habit, or the green sickness and its cure: but in the latter case, where the blood is florid and too high, attenuating alteratives and detergents are the only remedies, because they are fittest to carry the blood through those little apertures destined for its discharge into the uterus. *Quincy*.

EMOLLIENTS, such medicines as theathe and soften the asperities of the humours, and relax and supple the solids

at the same time. The word is derived from *emolio* to soften.

EMPERESS, or **EMPRESS**, the wife of an emperor, or a woman who governs singly an empire, in her own right.

EMPEROR, *Imperator*, a title of honour among the ancient Romans, conferred on a general who had been victorious, and now signifies a sovereign prince, or supreme ruler of an empire.

EMPETRUM, berry-bearing-heath, in botany, a genus of plants.

EMPHASIS, in rhetoric, a particular stress of the voice and action, laid on such words of the oration, as the orator wants to enforce upon his audience.

EMPIRE, *Imperium*, in political geography, a large extent of land, under the government of an emperor. See *Emperor*.

EMPIRIC, a physician who conducts wholly by experience, without studying physic in a regular way. Some even use the term, in a still worse sense, for a quack who prescribes at random, without being at all acquainted with the principles of the art.

EMPYREUM, the highest heaven, where the blessed enjoy the beatific vision.

EMPYREUMA, among chemists and physicians, the fiery taste or offensive smell which brandies, and other bodies prepared by fire, are impregnated with.

EMRODS, or **HÆMORRHOIDS**. See *Hæmorrhoids*.

EMULGENT, or **RENAL ARTERIES**, those which supply the kidneys with blood; being sometimes single, sometimes double on each side.

EMULSION, in pharmacy, properly signifies medicines which resemble milk. Thus solutions of gums, resins, or spermaceti, made by means of the yolk of an egg, in a proper vehicle, are called emulsions.

EMUNCTORY, in anatomy, a general term for those parts which serve to carry off the excrementitious parts of the blood and other humours of the body. Such more especially are the kidneys, bladder, and most of the glands.

ENALLAGE, in grammar, is when a possessive pronoun is put for a relative, or one mood or tense of a verb for another, &c.

ENALLAGE, in rhetoric, a figure whereby the discourse is changed and reversed, contrary to all the rules of the language; but this is not done altogether at pleasure, or without reason.

ENAMEL Painting, a species of painting differing from all other kinds of painting, in employing as a vehicle for the colours to hold the parts together, and bind them to the ground they are laid upon, glass or some vitreous body; which being mixed with the colours, and fused or melted by means of heat, becomes fluid; and having incorporated with the colours in that state, forms together with them, a hard mass when grown cold; and answers, therefore, the same end in this, as oil, gum-water, size, or varnish, in the other kinds of painting.

There are three kinds of enamel; the first for imitating precious stones; the second for painting in enamel; and the third is used by the enamellers, jewellers, and goldsmiths, on gold, silver, and other metals. The composition is the same in the main in all three kinds; the difference only consists in giving it the proper colour and transparency.

The white enamel used by painters is the same with the common enamel, only it is ground and cleansed with aqua fortis; then washed in fair water, and pounded again in a flint or agate mortar.

The black is made of perigeux, well calcined and ground with oil of aspic, with an equal quantity of the enamellers or goldsmiths black added thereto.

The ruddy brown is made with leys of vitriol and salt-petre, or with the rust of iron ground on an agate with oil of aspic.

The yellow enamel for jewellers, goldsmiths, &c. is brought chiefly from Venice and Holland, in little thin cakes of different sizes, with the maker's mark struck on it with a puncheon.

Vermilion red is made of vitriol calcined in a moderate fire for half an hour, between two crucibles luted together; afterwards washed in aqua fortis, and then in fair water.

Lake-red is composed of fine gold, dissolved in aqua-regia, with sal-ammoniac or common salt; then put into a cucurbit with spring-water and mercury in a sand-heat for twenty-four hours; then the powder at the bottom is to be ground with double its weight of flower of sulphur, and put into a crucible over a gentle fire: and after the sulphur is exhaled, the remaining red-powder is ground with ro-caille.

Blue is made of the azure or lapis lazuli used by oil-painters, well purified with brandy, and set in a bottle for five or six days, exposed to the sun.

E N C

An amber colour is made by white cop-
peras calcined. From the combination
of these seven or eight colours arises the
variety of all the rest.

ENARTHROSIS, in anatomy, a spe-
cies of diarthrosis. See *Diarthrosis*.

ENCÆNIA, the name of three sever-
al feasts celebrated by the Jews in me-
mory of the dedication, or rather purifi-
cation, of the temple, by Judas Macca-
beus, Solomon, and Zorobabel.

This term is likewise used in church
history for the dedication of Christian
churches.

ENCAMPMENT, the pitching of a
camp. See *Camp*.

ENCANTHIS, in surgery, a tubercle
arising either from the caruncula lachry-
malis, and from the adjacent red skin;
sometimes so large, as to obstruct not only
the puncta lachrymalia, but also part of
the sight, or pupil itself.

It is of two kinds, viz. mild, without
hardness or pain; or malignant, which
is livid and very painful. The mild kind
is to be treated first by scarifying, and af-
terwards applying escharotic or caustic
medicines; and if this proves insufficient
the tumour may be touched, but with great
caution, with lapis infernalis; and to di-
vert the humours from the eye, issues and
setons, with phlebotomy and cooling pur-
ges, are proper. If all these fail, the
surgeon is to extirpate the tumour; in
which case it is better to leave part of the
morbid tubercle, than cut off any part of
the lachrymal caruncle, as the remains
of it may be afterwards cleared away by
escharotics. After the operation, it is
proper to apply deterging and healing me-
dicines, or a collyrium of lapis tutiæ,
myrrh, &c. till the wound is healed.

As to the malignant encanthis, inclin-
ing to be cancerous, it is generally better
to let it alone, and to mitigate its unea-
siness with cooling and lenient collyria,
rather than exasperate it by the operation,
or by escharotic medicines.

ENCEINTE, in fortification, the wall
or rampart which surrounds a place, some-
times composed of bastions or curtains,
either faced or lined with brick or stone,
or only made of earth. The enceinte is
sometimes only flanked by round or square
towers, which is called Roman wall.

ENCEPHALI, in medicine, worms
generated in the head, where they cause
so great a pain, as sometimes to occasion
distraction.

The encephali are very rare, but there
are some diseases wherein they swarm;

E N D

from whence we are told pestilential fe-
vers have wholly arisen. Upon the dis-
section of one who died of this fever, a
little, short, red worm was found in the
head, which Malmsey wine, wherein
horse-radish had been boiled, could only
destroy. This medicine was afterwards
tried on the sick, most of whom it cured.

The like worms have also been taken
out by trepanning, and the patient cured.
Those worms that generate in the nose,
ears, and teeth, are also called encephali.

ENCHANTER, one supposed to prac-
tise enchantment, or fascination.

ENCHASING, INCHASING, or
CHASING, the art of enriching and
beautifying gold, silver, and other metal-
work, by some figures represented thereon,
in low relieve.

Enchasing is practised only on hollow
thin works, as watch-cases, cane-heads,
tweezer-cases, &c. It is performed by
punching or driving out the metal, to form
the figure from within-side, so as to stand
out prominent from the plane or surface
of the metal. In order to this, they pro-
vide a number of fine steel-blocks, or
punchcons, of divers sizes; and the de-
sign being drawn on the surface of the
metal, they apply the inside upon the
heads or tops of these blocks, directly
under the lines or parts of the figures;
then, with a fine hammer striking on the
metal, sustained by the block, the metal
yields, and the block makes an indenture,
or cavity, on the inside, corresponding to
which there is a prominence on the out-
side, which is to stand for that part of the
figure.

Thus the workman proceeds to chase
and finish all the parts by successive ap-
plication of the block and hammer, to the
several parts of the design: and it is sur-
prising to consider with what beauty and
justness, by this simple piece of mecha-
nism, the artists in this kind will repre-
sent foilages, grotesques, animals, histo-
ries, &c.

ENCLITICA, in grammar, particles
which are so closely united with other
words, as to seem part of them, as in
virumque, &c.

ENCROACHMENT. See *Incroach-*
ment.

ENCYCLOPÆDIA, the circle of arts
and sciences.

ENDECAGON, in geometry, the same
with hendecagon.

ENDEMIC, or ENDEMICAL DI-
SEASES, those to which the inhabitants of
parti-

particular countries are subject more than others, on account of the air, water, situation, and manner of living.

ENDIVE, *Endivia*, in botany, &c. the broad-leaved succory.

Marsigli describes a plant which he calls sea-endive, from its resemblance to the common garden endive.

ENDORSED, *Endorsé*, in heraldry, is said of things borne back to back, more usually called *adossé*.

ENDOWMENT, in law, the settling a dower on a woman; though sometimes it is used figuratively, for settling provision upon a parson on the building of a church; or the serving a sufficient portion of tithes for a vicar, when the benefice is appropriated.

* **ENDYMION**, in fabulous history, the son of Athlius, and grandson of Jupiter, who taking him up into heaven, he had the insolence to solicit Juno, for which he was cast into a deep sleep; when Luna concealed him in a cave of Mount Latmos, in Caria, where she had fifty daughters by him, and a son named *Ætolus*, after which he was again exalted to the skies.

ENEMY, in law, an alien or foreigner, who publicly invades the kingdom.

ENERGY, a term of Greek origin, signifying the power, virtue or efficacy of a thing. It is also used, figuratively, to denote emphasis of speech.

ENFILADE, in the art of war, is used in speaking of trenches, or other places, which may be scoured by the enemy's shot, along their whole length. In conducting the approaches at a siege, care must be taken that the trenches be not enfiladed from any work of the place.

ENFRANCHISEMENT, in law, the incorporating a person into any society or body politic: thus, where any person is enfranchised, or made free, of any city, borough, or company, he is said to have a freehold therein during life; and cannot, for barely endeavouring any thing against the corporation, forfeit the same.

ENGINE, in mechanics, a compound machine, made of one or more mechanical powers, as levers, pulleys, screws, &c. to raise, project, or sustain any weight, or produce any effect which could not be easily affected otherwise.

Engines are extremely numerous; some used in war, as the battering-ram, balista, waggons, chariots, &c. others in trade and manufactures, as cranes, mills, presses,

&c. others to measure time, as clocks, watches, &c. and others for the illustration of some branch of science, as the orrery, cometarium, and the like. See *Battering-Ram*, *Balista*, &c.

In general we may observe, concerning engines, that they consist of one, two, or more of the simple powers variously combined together; that in most of them the axis in peritrochio, the lever, and the screw, are the constituent parts; that in all a certain power is applied to produce an effect of much greater moment; and that the greatest effect, or perfection, is when it is set to work with four ninths of that charge which is equivalent to the power, or will but just keep the machine in equilibrio.

In all machines, the power will just sustain the weight, when they are in the inverse ratio of their distances from the center of motion.

ENGINE for extinguishing fires, a machine for raising a considerable quantity of water, in one continued stream, for the extinguishing accidental fires.

Fire ENGINE, or *Steam ENGINE*, a machine for raising water by the help of fire. The fire-engine is the most admirable, curious, and compounded machine that we find among all those whose inventions have been owing to the discoveries of modern philosophy, and which affords the greatest advantages to mankind. The fire-engine is of two sorts, of which we shall here give the theory and figures of each, according to the latest perfection in which they are made.

The marquis of Worcester, in his *Century of Inventions*, published in the year 1663, is probably the first who proposed raising great quantities of water by the force of fire turning water into a steam; and he mentions some engine of this kind, which he says played a continual stream, in the manner of a fountain, forty feet high. He also says, that a person attending it turned two cocks; that one vessel of water being consumed, another begins to force and re-fill with cold water; and this alternately and successively, the fire being attended and kept constantly burning by the same person, in the interim between turning the cocks.

Captain Savary, having read this account, immediately attempted to raise water by fire, and was the first who erected an engine for this purpose, in the form we have since had them. To secure the invention to himself, he purchased all the

books that were to be found, printed by the marquis upon that occasion, and burnt them; and at the same time declared that he found out the method by accident. He made many experiments to bring the machine to perfection, and erected several for gentlemen's seats.

But the progress of the engine was stopped, till long time afterwards, when Mr. Newcomen and Mr. J. Cawley contrived another way to raise water by fire, where the steam to raise the water from the greatest depths of mines is not required greater than the pressure of the atmosphere.

We shall not give any description of the fire engine, as we think it almost impossible to convey a clear idea of any such complicated machine otherwise than by a model. Great additional improvements have been made to it by Mr. Maira, of Portugal, F. R. S. and Mr. Payne.

ENGINEER, one skilled in the nature of engines in general; but it is commonly applied to an officer who is appointed to inspect and contrive any attacks, defences, &c. of a fortified place.

* ENGLAND, the southern and most fertile part of the island of Great Britain, derived its name from the Angles, the ancient inhabitants of a small country of the same name, in the duchy of Sleswic, in Denmark, who came over with the Saxons to assist the Britons. It is situated between two degrees east, and six degrees west longitude, and between forty-nine degrees fifty minutes, and fifty-five degrees forty-five minutes north latitude. It is surrounded by the Atlantic and German oceans, on the east, south, and west; is parted on the north from Scotland, by the Tweed, two other rivers, and some mountains. The German ocean separates it from Germany, and also both the Netherlands on the north-east; and it is divided on the south, from France, by the English channel, the narrowest part of which, between Dover and Calais is called *Pas de Calais*, or the straits of Calais; on the west, it is separated from Ireland by St. George's channel. The air is neither so hot in summer, nor so cold in winter, as in other countries of the same latitude: not that we are entirely free from long, cold, frosty, severe winters, and hot, dry, parching summers, but then they happen but seldom. Formerly this kingdom was over-run with forests, there having been no less than sixty-nine, which took up two-thirds of the whole, of which there are but four left that are remarkable, viz.

Windfor, New-Forest, the Forest of Dean, and the Forest of Sherwood. The principal timber in this island is oak, elm, ash, and beech: but we have other trees upon many accounts as useful, as the walnut, poplar, maple, horn-beam, hazle, willow, fallow, sycamore, and arbele. The soil is various, but chiefly consists of clay, gravel, and sand. The clays are fit for wheat and beans, and the other for barley and oats, and any of them will produce peas. The lightest soils will bear turnips, and after them barley, except in very dry years. Besides, there have been great improvements made of late years, by new methods of husbandry, and sowing clover, cinquefoil, trefoil, lucern, and other grass-seeds. In some parts, as Kent and Essex, there are large plantations of hops; and in others, considerable quantities of flax and hemp. It has been computed, that thirty-four millions of bushels of wheat is annually produced in England, of which great quantities are often exported into other countries. The barley may be about as much, of which twenty-three millions of bushels are converted into malt, to make ale and beer. A million more is used by the malt-distillery. The rest is made into bread, exported abroad, or reserved for seed. In some other parts, especially the northern, there is a great deal of rye, which is mixt with wheat and made into bread. The grain for horses are beans, oats, and vetches. However, in some of the northern parts, they make the oat-meal into cakes, which serves them entirely for bread.

The animals of this kingdom are beeves, or horned cattle, horses, asses, a few mules, hogs, sheep, goats, red and fallow deer, hares, rabbits, dogs, cats, foxes, badgers, weazels, ferrets, pole-cats, squirrels, rats, mice, moles, hedge-hogs, and otters. Our horned cattle are the largest and best we meet with any where; and there is a lesser sort brought from Wales and Scotland, whose flesh is very sweet and good. Our sheep are very valuable both for their fleeces and flesh. In Lincolnshire they are prodigiously large; but those that feed upon short grass throughout the kingdom, are small, and yet are by much the finest eating; their flesh is commonly called near London Down-mutton.

The tame fowls are cocks and hens, geese, ducks, turkeys, peacocks, and tame pigeons. The swans are likewise pretty tame, though they are not domestic. The wild

wild are bustards, wild-geese, wild-ducks, teals, wigeons, plovers, pheasants, partridges, wood-cocks, grouses, heath-cocks, moor-hens, kites, hawks of various kinds, cuckows, several sorts of owls, rooks, ravens, crows, jackdaws, magpies, jays, wood-peckers, wall-creeper, ox-eye-creeper, hoopoes, king-fishers, water-ouzel, quails, turtle-doves, stock-doves, pigeons, thrushes, blackbirds, fieldfares, stares, martins, swallows, red-starts, robin-red-breasts, larks of several sorts, nightingales, wrens, titmice, sparrows, bulfinches, goldfinches, linnets, yellow-hammers, water-wagtails, cranes, herons, bitterns, snipes, godwits, curlews, red-shanks, lapwings, knots, rusts, coots, cormorants, shags, choughs, and wheat-ears.

The rivers, lakes, and ponds produce salmon, trout, pikes, jacks, carps, tench, charrs, graylings, perch, roach, dace, barbel, thad, mullets, bream, eels, plaice, flounders, smelts, gudgeons, haddocks, and cray-fish. In the sea are cod-fish, whiting, turbot, halibut, soles, herrings, pilchards, sprats, dabs, mackerel, lumps, sea-gudgeons, sea-eels, sand-eels, lobsters, crabs, prawns, shrimps, oysters, and other shell-fish. The herrings and pilchards are cured in different manners, and exported into other countries.

With regard to metals, we have iron mines in several parts of England, lead-mines in Derbyshire, and tin-mines in Cornwall, which produce the finest tin in Europe. Besides these, we have copper-mines, and silver-mines, but these last will hardly pay the expence of working. We have one mineral, which some think to be peculiar to England, and that is black-lead, which is got out of a hill in Cumberland. Marble, free-stone, salt-springs, and pit-coal, in various parts of the kingdom. London is supplied from Newcastle and Sunderland with pit-coal, which, because it is brought by the sea, is by the inhabitants improperly called sea-coal. Fuller's earth is not very rare or costly, but is of great advantage to the cloathing trade.

In England there are forty counties, which send eighty knights to parliament, and twenty-five cities which send fifty citizens, of which Ely sends none, and London four; and 167 boroughs, which send two burgeses each; besides five boroughs which send but one each, viz. Abington, Banbury, Bewdley, Higham, Ferrers, and Monmouth. The two universities send four. The cinque ports, Hastings,

Dover, Sandwich, Romney, and Hith, send two each; and their three dependents, Rye, Winchelsea, and Seaford, send two each. Wales sends twelve knights for the twelve counties, and twelve burgeses for twelve boroughs, Pembroke sending two, and Merioneth none. In Scotland they send thirty knights and fifteen burgeses; which make in all 558 members of the House of Commons.

ENGLISH, or the ENGLISH-TONGUE, the language spoken by the people of England, and, with some variation, by those of Scotland, as well as part of Ireland, and the rest of the British dominions.

The ancient language of Britain is generally allowed to have been the same with the Gaulic, or French; this island, in all probability, having been first peopled from Gallia, as both Cæsar and Tacitus affirm, and prove by many strong and conclusive arguments, as by their religion, manners, customs, and the nearness of their situation. But now we have very small remains of the ancient British tongue, except in Wales, Cornwall, the islands and highlands of Scotland, part of Ireland, and some provinces of France; which will not appear strange, when we consider the successive invasions, and conquests of the Romans, Saxons, Danes, and Normans, by whom the ancient British language was, in a manner, extirpated, and succeeded by the Saxon, and after that blended with the Norman French. But, besides these, a change in the language has been effected by two other causes. The first is that of commerce; for as the inhabitants of Great Britain have been for a long series of years greatly addicted to trade, the names of offices, dignities, names of wares, and terms of traffic, have been introduced, and formed according to the genius of our own tongue. The second is that of learning, from which our tongue has received no small improvement; for, as to the Greek and Latin, the learned have, together with the arts and sciences, now rendered familiar among us, introduced abundance, nay almost all the terms of art in the mathematics, philosophy, physic, and anatomy; and we have entertained many more from the Latin, French, &c. for the sake of neatness and elegance: so that, at this day, our language, which, about 1800 years ago, was the ancient British, or Welsh, &c. is now a mixture of Saxon, Teutonic, Dutch, Danish, Norman, and modern French,

embellished with the Greek and Latin. Yet this, in our opinion, is so far from being a disadvantage to the English tongue, as now spoke, that it has so enriched it, as to become the most copious, significant, fluent, courteous, amorous, and masculine language in Europe, if not in the world: this, indeed, was Camden's opinion of it in his time, and Dr. Heylin's in his: if then the English tongue, in the opinion of these learned authors, deserved such a character in their days, how much more now, having since received such considerable improvements from so many celebrated writers.

ENGRAILED, or **INGRAILED**, in heraldry, a term derived from the French, *grêle*, hail; and signifying a thing the hail has fallen upon and broke off the edges, leaving them ragged, or with half rounds, or semi-circles, struck out of their edges.

ENGRAVING, the art of cutting on wood, metals, precious stones, &c. figures, landscapes, letters, &c.

ENGRAVING on Wood. See the article *Cutting in Wood*.

ENGRAVING on Copper, the making, correspondently to some delineated figure or design, such concave lines on a smooth surface of copper, either by cutting or corrosion, as render it capable, when charged properly with any coloured fluid, of imparting by compression an exact representation of the figure or design to any fit ground of paper or parchment.

The method by which engraving is at this time performed, is of three kinds: by the graver or tool alone, which is in common language the only kind called engraving: by corrosion with aqua-fortis, which is generally called etching: and by covering the surface of a copper-plate with lines, in such manner, that the whole would produce the effect of black in an impression: and then scraping or burnishing away part of the lines, so as to cause the remainder to have the same effect as if they had been cut on the even surface, according to the delineation of any figure or design; which last kind is called scraping in mezzotinto. See *Etching* and *Mezzotinto*.

Engraving with the tool was the kind originally practised, and it is yet retained for many purposes. For though the manœuvre of etching be more easy, and other advantages attend it; yet where great regularity and exactness of the stroke or lines are required, the working with the graver is much more effectual; on which account it is more suitable to the precision

necessary in the execution of portraits; as there every thing the most minute must be made out and expressed, according to the original subject, without any license to the fancy of the designer in deviating from it, or varying the effect either by that masterly negligence and simplicity in some parts, or those bold sallies of the imagination and hand in others, which give spirit and force to history painting.

The principal instruments used in engraving with the tools, are gravers, burnishers, an oil-stone, and a cushion for bearing the plates.

Gravers are made in several forms with respect to the points, some being round, others square, and a third kind lozenge. The round-pointed is best for scoring lines; the square for cutting broad and deep; and the lozenge for more delicate and fine strokes and hatches. La Boffe recommends, as the most generally useful, such as are of a form betwixt the square and lozenge; and advises, that they should be of a good length; small towards the point, but stronger upwards, that they may have strength enough to bear any stress there may be occasion to lay upon them; for if they be too small and mounted high, they will bend, which frequently causes their breaking, especially if they be not employed for very small subjects.

Burnishers are another kind of instruments used to assist in the engraving on some occasions, as well as to polish the plates. Those used for engraving may be such as are made for other purposes; which, being to be procured every-where, do not require a further description here. The principal application of them in engraving, besides their use in polishing the plates, is to take out any scratches, or accidental defacings, that may happen to the plates during the engraving; or to lessen the effect of any parts that may be too strongly marked in the work, and require to be taken down.

A cushion, as it is called, is likewise generally used for supporting the plate in such manner, that it may be turned every way with ease. It is a bag of leather filled with sand, which should be of the size that will best suit the plates it is intended to bear. They are round and about nine inches over, and three or four inches in thickness.

The cushion made as above directed, being laid on the table firmly fixed, the plate must be put upon it; and the graver being held in the hand, the point must be applied to the plate, and moved in the proper

proper direction for producing the figures of the lines intended; observing, in forming straight lines, to hold the plate steady on the cushion; and where they are to be finer, to press more lightly, using greater force where they are to be broader and deeper. In making circular or other curve lines, the hand and graver must be held steady, with the arm resting upon the table; and the plate moved upon the cushion under the graver, so that as each proper part passes the point, the figure intended may be cut upon it: for crooked and winding lines cannot be produced with the same neatness and command by any other means. After part of the work is engraved, it is necessary to scrape it with the sharp edge of a burnisher, or graver, passed in the most level direction over the plate to take off the roughness formed by the cutting of the graver; but great care must be taken not to incline the edge of the burnisher, or tool used, in such manner, that it may take the least hold of the copper; as it would otherwise produce false strokes or scratches in the engraving: and that the engraved work may be rendered more visible, it may afterwards be rubbed over with a roll of felt dipped in oil. In using the graver, it is necessary to carry it as level as possible with the surface of the plate; for otherwise, if the fingers slip betwixt them, the line that will be produced, whether curve or straight will become deeper and deeper in the progress of its formation; which entirely prevents strokes being made at one cut, that will be fine at their extremities, and larger in the middle; and occasions the necessity of re-touching, to bring them to that state. For this reason it is very necessary for those, who would learn to engrave in perfection, to endeavour, by frequent trials, to acquire the habit of making such strokes both straight and curving, by lightening or sinking the graver with the hand, according to the occasion. If after finishing the design, any scratches appear, or any part of the engraving be falsely executed, such scratches, or faulty parts, must be taken out by the burnisher, and further polished, if necessary, by the abovementioned roll; and the plate may be cleansed as at first, by crumbs of bread and chalk, in order that the obliterated part may be restored, where there is occasion by re-engraving it.

The plate being thus engraved, it is proper to take off the edges, by using first a rough file, and afterwards a smoother;

and to blunt the corners a little, by the same means; after which the burnisher should be passed over the filed places, to take away the scorings, that no part of the printing ink may be retained in them.

ENGRAVING on precious Stones, the representing of figures, or devices, in relief, or indented, on divers kinds of hard polished stones.

The art of engraving on precious stones is one of those wherein the ancients excelled; there being divers antique agates, cornelians, and onyxes, which surpass any thing of that kind the moderns have produced. Pyrgoteles among the Greeks, and Dioscorides under the first emperors of Rome, are the most eminent engravers we read of: the former was so esteemed by Alexander, that he forbade any body else to engrave his head: and Augustus's head, engraved by the latter, was found so beautiful, that the succeeding emperors chose it for their seal.

All the polite arts having been buried under the ruins of the Roman empire, the art of engraving on stones met the same fate. It was retrieved in Italy at the beginning of the fifteenth century, when one John of Florence, and after him Dominic of Milan, performed works of this kind no way to be despised. From that time such sculptures became common enough in Europe, and particularly in Germany, whence great numbers were sent into other countries; but they came short of the beauty of those of the ancients, especially those on precious stones; for as to those on crystal, the Germans, and, after their example, the French, &c. have succeeded well enough.

In this branch of engraving, they make use either of the diamond, or emery.—The diamond, which is the hardest, and most perfect of all precious stones, is only cut by itself, or with its own matter. See *Diamond*.

As to rubies, emeralds, hyacinths, amethysts, garnets, agates, and other of the softer stones, they are cut on a leaden wheel, moistened with emery and water; and polished with tripoli on a pewter wheel. Lapis, opal, &c. are polished on a wooden wheel.

ENGRAVING on Steel is chiefly employed in cutting punches for coins, medals, &c.

The methods of engraving, with the instruments, &c. are the same for coins, as for medals and counters; all the difference consists in their greater or less relief; the

the relievo of coins being much less considerable than that of medals; and that of counters still less than that of coins.

The engraver in steel usually begins with punches, or punchions, which are in relievo, and serve for making the creux or cavities of the matrices, and dies. Though, sometimes, he begins immediately with the creux; but it is only when the intended work is to be cut very shallow. The first thing is to design his figures; then he moulds them in white wax, of the size and depth required; and from this wax he graves his punch.

This punch is a piece of steel, or at least of iron and steel mixed; on which, before they temper or harden it, the intended figure, whether a head, or a reverse, is cut, or carved in relievo. The instruments used in this graving in relievo, which are much the same as those where-with the finishing of the work in creux is effected, are of steel. The principal are gravers of divers kinds, chissels, flatters, &c. When the punch is finished, they give it a very high temper, that it may the better bear the blows of the hammer, where-with it is struck, to give the impression to the matrice.

What they call a matrice, or matrix, is a piece of good steel of a cubic form, called also a die; whereon the relievo of the punch is struck in creux. It is called matrix, because in the cavities or indentures thereof, the coins, or medals seem formed, or generated, as animals are in the matrix of their mother. To soften this steel, that it may more easily take the impressions of the punch, they make it red hot; and, after striking the punch thereon in this state, they proceed to touch up or finish the strokes and lines, where, by reason of their fineness, or the too great relievo, they are any thing defective, with some of the tools abovementioned.

The figure thus finished, they proceed to engrave the rest of the medal, as the mouldings of the border, the engrailed ring, letters, &c.

When the matrix is quite finished, they temper it, rub it well with pumice-stone, and clean out the stone again with a hair-brush; and, lastly, polish it with oil and emery.

Mr. Kirk, by his elegant medals engraved for the Sentimental Magazine, has convinced the connoisseurs in that art that his performances are superior to any other that have appeared.

ENNEAGON, in geometry, a figure consisting of nine angles, and as many sides.

ENNEAHÆDRIA, in natural history, the name of a genus of spars. The bodies of this genus are spars, composed of nine planes, in a triangular column, terminated at each end by a diagonal pyramid.

ENNEANDRIA, in botany, a class of plants, with hermaphrodite flowers, and nine stamina, or male parts, in each. The plants of this class are the bay-tree, rhubarb, &c.

ENS, among metaphysicians, denotes entity, being, or existence.

ENS, among chemists, imports the power, virtue, and efficacy, which certain substances exert upon our bodies.

ENS VENERI, the sublimate of equal quantities of dulcified calx of vitriol, and the dried flowers of sal ammoniac, a small proportion of which turns a large one of the infusion of galls black: it is red, saline, and astringent; and said to be an excellent medicine in distempers arising from a weakness of the solids, as the rickets, and the like.

ENSIGN, in the military art, a banner, under which the soldiers are ranged according to the different companies or parties they belong to.

ENSIGN, the officer that carries the colours, being the lowest commissioned officer in a company of foot, subordinate to the captain and lieutenant.

ENSIGN, in naval affairs, a sort of banner or flag hoisted on a pole, called the ensign-staff, over the stern of a ship. It is used to distinguish the ships of different nations from one another, as also the different squadrons of a fleet from each other. See *Flag* and *Signal*.

ENTABLATURE, or ENTABLEMENT, in architecture, that part of an order of a column, which is over the capital, and comprehends the architrave, frieze, and cornice.

It is different in different orders; for notwithstanding it consists of the three beforementioned divisions in all; yet these parts are made up of more or fewer particular members or subdivisions, according as the order is more or less rich. Vignola makes the entablature a quarter of the height of the whole column in all the orders. In the Tuscan and Doric, the architrave, frieze, and cornice, are all the same height. In the Ionic, Corinthian, and Composite, the whole entablature being of fifteen parts, five of these go to the architrave, four to the frieze, and six to the cornice. See *Tuscan*, *Doric*, &c.

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ENTAIL, in law, is a free estate intailed; that is abridged and limited to certain conditions prescribed by the donor or grantor.

ENTEROCELE, in surgery, is a kind of swelling, in which the intestine falls into the groin or scrotum. This disorder arises from a violent distension of the peritonæum and rings of the abdominal muscles, through which the intestines prolapse into the scrotum; and proceeds from some violence by a fall, blow, or straining, to leap, lift up great weights, vomiting, &c. and according to the nature of the cause, the rupture is formed either instantly, or imperceptibly by degrees. This rupture is always attended with pains, and usually happens but in one side, never in both at a time; sometimes the intestine alone falls down: at other times it is accompanied with the omentum. The tumour appears soft to the touch like an intestine, or bladder, distended with wind: it first appears small in the inguen, and gradually descends down to the testicle of the same side in the scrotum, which is thereby sometimes distended half-way down the thigh, and even down to the knee: the other symptoms are the same with those of the bubonocoele.

The tumour increased by crying, plentiful eating, lifting, or carrying any burden; is contracted with cold, and dilated with heat; it may be distinguished generally from the hydrocele or pneumatocele, by its returning into the abdomen with a murmuring noise.

This kind of rupture may be sustained with but little inconveniencies by men not addicted to hard labour, and women with child; but it should never be left to itself without a support or truss, lest, by some accident, the intestines should become incarcerated, and incapable of being returned. When the disorder is recent, and in a young subject, it may be perfectly cured without danger of a relapse; as it may also in adults and old people, by constantly wearing a proper truss. It is less dangerous when the intestine is attended with the omentum. When the intestine is returnable, the surgeon should immediately reduce the parts, and retain them in their proper situation, and close up the aperture firmly with a truss, bandage, or by incision, termed celotomy.

Another method consists chiefly in passing a small gold wire round the upper part of the process of the peritonæum, near the ring of the abdominal muscles, leaving the testicle in its natural position: the wire is

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twisted by a pair of forceps, so as to confine the process of the peritonæum, without compressing the spermatic vessels in order to prevent the intestine from falling through it again: this method, is not thought effectual in most cases by Heister.

In order to preserve the testicle, some surgeons do not tie the process of the peritonæum and spermatic vessels with a ligature, but having returned the intestines and omentum, they then scarify the ring of the abdomen, through which the intestines prolapsed, together with the skin, in order to render the cicatrix more firm. If in the enterocele the intestine cannot be reduced, especially if it adhere to the process of the peritonæum, ring of the abdominal muscles, scrotum, or testicle, no truss or bandage will be of any service, there is then, but one method of saving the patient, by a severe operation; in order to which the integuments are to be divided; and when the sacculus appears, it is to be separated, and a small aperture made in it big enough to introduce a quill, or some other instrument, to separate the intestine from all its adhesions, before it is protruded into the abdomen, which should always be done where the intestine adheres; after which the wound is to be healed, and the patient secured from a relapse, by wearing the bandage-spica. See *Bandage, and Truss*.

If the stricture of the intestine is so great as to render all means ineffectual to reduce the rupture; the surgeon must then have recourse to the knife to save the patient.

ENTERO-EPIPLOCELE, in surgery, a kind of rupture in which the intestines and omentum, or caul fall down together into the scrotum.

ENTERO-EPILOMPHALUS, in surgery, a rupture caused by the intestine and caul falling down through the navel. This is a disorder common to women with child.

ENTERO-HYDROMPHALUS, in surgery, is when the tumour is caused by the gut and water swelling out at the navel.

ENTERSOLE, in architecture, a kind of little story, sometimes called a mezzanine, contrived occasionally at the top of the first story, for the convenience of a ward-robe, &c.

ENTERTAINMENT, in a theatrical sense. See *Farce*.

ENTHUSIASM, a transport of the mind, whereby it is led to imagine things in a sublime, surprising, and yet probable manner.

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ENTHUSIASM, in a religious sense, implies a transport of the mind, whereby it fancies itself inspired with some revelation, impulse, &c. from heaven.

There is a degree of assent, says Mr. Locke, which, with some men, has the same authority, as either faith or reason; and that is Enthusiasm; which, laying by reason; would set up revelation without it; whereby, in effect, it takes away both reason and revelation, and substitutes, in the room of it, the ungrounded fancies of a man's own brain, and assumes them for a foundation both of opinion and conduct.

Immediate revelation being a much easier way for men to establish their opinions, and regulate their conduct by, than the tedious labour of strict reasoning, it is no wonder that some have been very apt to pretend to it, especially in such of their opinions and actions as they cannot account for by the ordinary methods of knowledge, and principles of reason.

Hence we see, that, in all ages, men, in whom melancholy has mixed with devotion; or whose conceit of themselves has raised them into an opinion of greater familiarity with God, than is allowed others; have often flattered themselves with the persuasion of an immediate intercourse with the Deity, and frequent communications from the divine spirit.

Their minds being thus prepared, whatever groundless opinion comes to settle itself strongly upon their fancies, is an illumination from the spirit of God; and, whatsoever odd action they find in themselves an inclination to do, that impulse is concluded to be a call, or direction, from heaven, and must be obeyed. This we take to be properly enthusiasm, which, though rising from the conceit of a warm or overweening brain, works, where it once gets footing, more powerfully on the persuasions and actions of men, than either reason or revelation, or both together; men being mostly forwardly obedient to the impulses they receive from themselves.

When men are once got into this way of immediate revelation, of illumination without search, and certainty without proof, reason is lost upon them; they are above it: they see the light infused into their understandings, and they cannot be mistaken; like the light of bright sun shine, it shews itself, and needs no other proof, but its own evidence: they feel the hand of God moving them within, and the impulses of the spirit, and cannot be mistaken in what they feel.

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ENTHUSIAST, a person possessed with enthusiasm.

ENTHYMEME, among logicians, a syllogism, perfect in the mind, but imperfect in the expression, by reason one of the propositions is suppressed, as being easily supplied by the understanding of those with whom we discourse: as for example, *Every man is mortal; therefore every king is mortal*; where the minor proportion, *every king is a man*, is omitted as being sufficiently known.

ENTIER, in the manege, a resty horse that not only refuses to turn, but also resists the hand.

ENTIRE TENANCY, in law, is when the sole possession is in one person, in contradistinction to several tenancy, which is a joint, or common possession of two or more.

ENTREPAS, in the manege, a broken pace or going, that is neither walk nor trot, but has somewhat of an amble.

ENTROCHUS, in natural history, the name of a genus of fossils, of a very regular figure and structure, supposed, by many authors, to be *lapides sui generis*, or stones in their native state. They are, however, in reality, the fossil remains of some marine animal probably either of the echinus, or of the star-fish kind, filled like the fossil species of the echini, with a plated spar.

ENTRY, in law, signifies taking possession of lands or tenements, where a person has a right so to do. It is also used for a writ of possession.

Bill of ENTRY. See *Bill*.

ENVELOPE, in fortification, a work of earth, sometimes in form of a simple parapet, and at others, like a small rampart with a parapet; it is raised sometimes on the ditch, and sometimes beyond it.

ENVIRONNE, in heraldry, signifies surrounded with other things: thus, they say, a lion *environne'* with so many bezants. See *Bezant*.

ENUMERATION, an account of several things, in which mention is made of every particular article.

ENUMERATION, in rhetoric, a part of peroration, in which the orator, collecting the scattered heads of what has been delivered throughout the whole, makes a brief and artful relation, or recapitulation thereof.

ENVOY, a person deputed to negotiate some affair with any foreign prince or state.

ENVY, in ethics, an uneasiness of the mind, caused by the consideration of a good

consideration of a good we desire, obtained by one we think less worthy of it than ourselves. See *Passion*.

EPACTS, in chronology, the excesses of the solar month above the lunar synodical month, or of the solar year above the lunar year of 12 synodical months.

The common lunar year of 12 synodical lunations consists of 354 days, 8 hours, 48 min. 57 sec. whereas the solar or tropical year consists of 365 days, 5 hours, 48 min. 57 sec. it is plain therefore that the solar year exceeds the lunar by 10 days, 21 hours, 00 min. 19 sec. and in the space of about 33 years, the beginning of the lunar year will have moved through all the variety of seasons, whence it is called the moveable lunar year; and this form of the year is at this time used by the Turks and Arabs.

Hence, as the Julian year is 365 days, 6 hours, and the lunar year as above only 354 days, 8 hours, 48 min. 57 sec. the annual epact will be 10 days, 21h 11' 22"; that is, nearly 11 days. Consequently the epact of 2 years is 22 days: of 3 years, 33 days; or rather 3, since 30 days is an embolismic, or intercalary month.

Thus, the epact of 4 years is 14 days, and so of the rest; and at the end of every 19th year the epact becomes 30 or 0; consequently the 20th year the epact is 11 again; and so the cycle of epacts expires with the golden number, or lunar cycle of 19 years, and begins again with the same.

Again, as the new moons are the same, that is, as they fall on the same day every 19 years, so the difference between the lunar and solar years is the same every 19 years: and because the said difference is always to be added to the lunar year, in order to adjust, or make it equal to the solar year; hence the said difference respectively belonging to each year of the moon's cycle is called the epact of the said year, that is, the number to be added to the said year, to make it equal to the solar, the word being formed from the Greek, *induco intercaléo*.

Upon this mutual respect between the cycle of the moon, and the cycle of the epacts is founded this rule for finding the epact belonging to any year of the moon's cycle. Multiply the year given of the moon's cycle into 11; and if the product be less than 30, it is the epact sought; if the product be greater than 30, divide it by 30, and the remainder

of the dividend is the epact according to the Julian account.

But as a synodical month or space of time contained between the moon's parting from the sun, at a conjunction, and returning to him again, is 29 days, 12 hours, 44 min. and 6 sec. it follows, that 235 lunations are made in 6939 days, 16 hours, 43 min. 30 sec. but in 12 Julian years are 6939 days, 18 hours; and consequently, the new moons, after 19 Julian years, will not return to the same hour of the day, but will happen 1 hour, 19 min. 30 sec. sooner.

And therefore, because the new moons do not return at the same time of the day that they did 19 years before; but in 312 years they anticipate one day; we must, in order to find the epact according to the Gregorian calendar, make proper allowance for the anticipation since the Nicene council which was held in the year 325.

To do this, divide the centuries of the proposed year by 4; let the quotient be multiplied by 43, and the remainder by 17; to the sum of these products add 86, and divide the whole by 25. Let the quotient (neglecting fractions) be subtracted from 11 times the prime or golden number, then will the remainder, rejecting thirties be the epact required.

To find the epact until the year 1900, the following rule will serve:

Subtract one from the prime or golden number; multiply the remainder by 11; and, rejecting thirties as before, the remainder will give the epact.

EPANORTHOSIS, in rhetoric, a figure by which a person corrects, or ingeniously revokes, what he just before alleged, as being too weakly expressed, in order to add something stronger and more conformable to the passion with which he is agitated.

EPAULE, in fortification, the shoulder of a bastion, or the place where its face and flank meet. See *Bastion*.

EPAULEMENT, in fortification, a work raised to cover sidewise, is either of earth, gabions, or fascines, loaded with earth. The epaulements of the places of arms for the cavalry, at the entrance of the trenches, are generally of fascines mixed with earth.

EPAULEMENT, a mass of earth called likewise a square orillon from its figure raised to cover the cannon of a cazemate, and faced with a wall.

It is likewise used for any work, thrown

to defend the flank of a post, or other place.

EPENTHESIS, in grammar, the interposition or insertion of a letter or syllable in the middle of a word, as *alittum*, for *alitum*.

EPHA, or EPHAH, in Jewish antiquity, a measure for things dry, containing 1.0961 of a bushel.

EPHEDRA, the sea-grape, or shrub horse-tail, a genus of plants, the fruit of which is red, succulent, and of an acid austere taste: its juice, taken in wine, is said to be good for the coeliac passion and fluor albus.

EPHEMERA, in medicine, the name of a species of fever continuing the space of one day, or sometimes more; for the medical writers express themselves by *ephemera simplex, vel plurimum dierum*.

This species of fever has this peculiar to it, that the pulse is at first large, but as it becomes afterwards moderately quick and frequent, so it is equal, soft, and regular, as in a natural state. It seizes the patient suddenly, and afflicts him with no other symptoms than a pain of the head and stomach, a nausea, heat, and restlessness. The persons most subject to this fever are young men who have much blood, and feed heartily, and such as have had any habitual discharge of blood stopped upon them, whether natural, as in the hæmorrhoidal or menstrual discharges, or artificial, such as frequent bleeding, cupping, and the like; and those who have thrown their blood into violent emotions by the too free use of spirituous liquors, too violent exercise, unusual watchings, long stay by large fires, a sudden repression of sweats by cold water, or by violent passions, particularly anger. In the treatment of this fever, the proper course is to attemperate the violent motions of the blood with nitrous and the fixed antimonial medicines, and occasionally with gentle acids. Sweat is to be promoted. Nitre, crabs-eyes, &c. may be prescribed in small doses every three or four hours; and towards night, sudorifics should be joined to these, such as the contrayerva-root, or the like. The ephemera, properly so called, differs in nothing except the time of its duration, from that which commonly lasts four days.

EPIEMERA, the day-fly, in zoology, a genus of flies belonging to the neuroptera order, and so called from their living only one day and a night.

Of this genus there are several species, distinguished by their different colours

and the number of hairs in their tail; some having two, and others three.

EPHEMERIDES, in literary history, an appellation given to those books or journals, which shew the motions and places of the planets for every day of the year.

It is from the tables contained in these ephemerides, that eclipses, and all the variety of aspects of the planets are found.

EPHIPPIUM, in anatomy, the same with the cella turcica, being a part of the os sphenoides.

EPHOD, in Jewish antiquity, one part of the priestly habit being a kind of girdle which, brought from behind the neck over the two shoulders, and hanging down before, was put cross the stomach, then carried round the waist, and made use of as a girdle to the tunic.

There were two sorts of ephods, one of plain linen for the priests, and the other embroidered for the high priest: of this last Moses gives an ample description.

EPIC, or HEROIC POEM, a discourse formed upon a story partly real and partly feigned, representing some one glorious and fortunate action, that is distinguished by a variety of wonderful, yet probable and pleasing events, and delivered in verse by way of narration, in a sublime and flowing stile, to form the manners, and inflame the mind with the love of virtue.

What distinguishes an epic from a dramatic poem, is, its being a narration that comes immediately from the poet, and is not represented as a tragedy by persons introduced for that purpose.

The chief things to be considered in an epic poem are, first, the fable, that is, the form, and artful representation of the action, which is the matter of the poem; and as the action is more or less perfect, so is the fable. The action in an epic poem, as well as in tragedy, must be one, not all the actions of a person's life; because the mind is better satisfied with the contemplation of a single object that is easily understood, than when it is perplexed with a variety, and lost in confusion. And on this principal action must all the episodes or under-actions so depend, as to become different, yet useful, members of the same body, and contribute to its support. It must likewise be entire, that is, complete in all its parts, or, as Aristotle describes it, have a beginning, a middle, and an end. Nothing should go before, be intermixed with, or follow.

followed after this main action, but what is related to it; nor should any single step be omitted in that just and regular process, which it must be supposed to take from its origin to its consummation. The epic action ought also to be great, that it may strike us with awe, and be suitable to the dignity of the princes, heroes, and illustrious persons, who are supposed to be speaking and acting in the poem. It should likewise be interesting, that it may engage our passions and affections; and entire, that the mind may be wholly satisfied. As to its duration, it is not circumscribed within any limited time; but the warmer and more violent the action is, the shorter must be its continuance. Thus the *Iliad*, whose subject is the anger of Achilles, contains only forty-seven days; but the *Æneid*, whose hero is of a quite different character, takes up a much longer time.

The manners and sentiments fall under the same rule as those of tragedy: and as to the diction, it ought to be perspicuous, but at the same time figurative, noble, and sublime.

This is all that can be observed most essential to an epic poem: little need be said about the machinery, which, among the ancient heathens, was the agency of their false gods, and of angels and demons among us christians: its beauty and magnificence is well known.

EPICERASTICA; medicines which attemperate or obtund the acrimony of the humours, and mitigate the uneasy sensation of the parts thence arising. Among medicines of this kind, are reckoned emollient roots; as those of marsh-mallow, mallow, and liquorice.

The leaves of mallows, water-lily, the large house-leek, purslane, and lettuce.

The seeds of barley decorticated, white henbane, lettuce, flax, white poppy, and rue.

The fruits, jubebs, raisins, sweet apples, sweet prunes, febestens, sweet almonds and pine-nuts.

Among juices and liquors; almond-milk, starch, barley-water, pinguious broths, the milk of the sow-thistle, cream of ptisan, and the juices of the leaves of night-shade, and winter cherry.

Among the parts of animals; the whites of eggs, butter, milk of all kinds, whey; the head and the feet of a calf, and also a sheep's head, and broths prepared of them; jellies of harshorn and ivory.

Among mucilages; the seed of fleawort, quinces, of the seed and root of marsh-mallows; of the seed of flax, mallows, and of the root of borragé.

Among oils; oil of olives, violets, sweet almonds, expressed oils of the seed of gourd, white henbane, and white poppy.

Among ointments; unguentum rosatum and unguentum albam camphoratum.

Among syrups; the syrups of violets, of apples, of marsh-mallows, of Ferne-lius, liquorice, jubebs, poppies, and of purslane.

Among the various shop preparations; the pulp of cassia, diacodium, diapenidium; sugar of violets, julap of violets, honey of violets.

EPICUREAN PHILOSOPHY, the doctrine or system of philosophy maintained by Epicurus and his followers.

Epicurus, the Athenian, one of the greatest philosophers of his age, was obliged to Democritus for almost his whole system, notwithstanding he piqued himself upon deriving every thing from his own fund. He wrote a great number of books, which are said to amount to above 300. Though none of them are come down to us, no ancient philosopher's system is better known than his, for which we are mostly indebted to the great Lucretius, D'ones Laertius, and Tully.

His philosophy consisted of three parts, canonical, physical, and ethereal. The first was about the canons, or rules of judging. The censure which Tully passes upon him for his despising logic, will hold true only with regard to the logic of the stoics, which he could not approve of, as being too full of nicety and quirk. Epicurus was not acquainted with the analytical method of division and argumentation, nor was he so curious in modes and formation as the stoics. Soundness and simplicity of sense, assisted with some natural reflection, was all his art. His search after truth proceeding only by the senses, to the evidence of which he gave so great a certainty, that he considered them as an infallible rule of truth, and termed them the first natural light of mankind. In the second part of his philosophy he laid down atoms, space, and gravity, as the first principles of all things; he did not deny the existence of a God, but thought it beneath his majesty to concern himself with human affairs; he held him a blessed, immortal being, having no affairs of his own to take care of, and above meddling with those of others. As to his

ethics, he made the supreme good of man to consist in pleasure, and consequently supreme evil in pain. Nature itself, says he, teaches us this truth, and prompts us from our birth to procure whatever gives us pleasure, and avoid what gives us pain. To this end he proposes a remedy against the sharpness of pain: this was to divert the mind from it, by turning our whole attention upon the pleasures we have formerly enjoyed; he held that the wise man must be happy, as long as he is wise; that pain, not depriving him of his wisdom, cannot deprive him of his happiness.

There is nothing that has a fairer shew of honesty than the moral doctrine of Epicurus. Gassendus pretends, that the pleasure in which this philosopher has fixed the sovereign good, was nothing else but the highest tranquility of mind in conjunction with the most perfect health of body; but Tully, Horace, and Plutarch, as well as almost all the fathers of the church, give us a very different representation: indeed the nature of this pleasure, in which the chief happiness is supposed to be seated, is a grand problem in the morals of Epicurus. Hence there were two kinds of Epicureans, the rigid and the remiss: the first were those who understood Epicurus's notion of pleasure in the best sense, and placed all their happiness in the pure pleasures of the mind, resulting from the practice of virtue. The loose or remiss Epicureans, taking the words of that philosopher in a gross sense, placed all their happiness in bodily pleasures, or debauchery. Thus we have the whole mystery of this celebrated doctrine. It was innocent in expression, but criminal in thought; it had a beautiful outside, but it was all corruption within. These loose philosophers took up a seeming austerity to disguise their secret indulgence, and all their schemes of morality were but so many veils for their immoral behaviour.

EPICYCLOID, in geometry, a curve generated by a point taken in the periphery of a circle, that revolves upon the periphery of any other circle, either within or without it. A point of the circumference of a circle, proceeding along a plane, in a right line, and at the same time revolving on its center, describes a cycloid. And the generating circle, if, instead of moving on a right line should move along the circumference of another circle, whether equal or unequal, the curve described by any point in its circumference is called an encycloid,

EPIDEMIC, among physicians, an epithet of diseases, which, at certain times, are popular; attacking great numbers at or near the same time.

EPIDEMIC, diseases differ from those called endemic. See *Endemic*.

Upon the invasion of any unknown epidemical distemper, the physician will receive some information, with respect to the cure, first by reducing the distemper to some more known species, which it most resembles. Secondly, by observing its tendency at the vernal and autumnal equinoxes, at which seasons it is generally most prevalent. Thirdly, by attending to the spontaneous phenomena which precede, accompany, or follow, the death or recovery of the patient, and the better or worse state of the disorder. Fourthly, by diligently remarking the benefit or injury received, from whatever the patients are unavoidably obliged to do; whatever is taken into, or discharged out of the body. Fifthly, by comparing the cases of a great many patients labouring under the distemper at the same time. Sixthly, by abstaining from all remedies which are dubious, which exagitate and induce a considerable change in the humours, and thereby obscure the genus of the disease.

From these circumstances, duly attended to, the curative indication arises.

EPIDERMIS, in anatomy, the same with the cuticle.

EPIGASTRIC REGION, a part or subdivision of the abdomen.

EPIGASTRIC VESSELS, the arteries and veins belonging to the epigastric region; the former being branches of the celiac artery, and the latter of the iliac veins. See *Artery* and *Vein*.

EPIGLOTTIS, in anatomy, one of the cartilages of the larynx, or wind-pipe, being often of the shape of an ivy-leaf. In the act of swallowing it covers the glottis, or aperture of the larynx, and prevents any thing getting into it. See *Larynx* and *Glottis*.

EPIGRAM, in poetry, a short poem, or composition in verse, treating of one thing only, and whose distinguishing characters are brevity, beauty, and point.

The word epigram signifies inscription; for epigrams derive their origin from those inscriptions placed by the ancients on their statues, temples, pillars, triumphal arches, and the like; which, at first, were very short, being sometimes no more than a single word, but afterwards, increasing their length, they made them in verse to be the better retained by the memory.

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This short way of writing came at last to be used upon any occasion or subject; and hence the name of epigram has been given to any little copy of verses, without regard to the original application of such poems.

Its usual limits are from two to twenty verses, though sometimes it extends to fifty; but the shorter the better it is, and the more perfect, as it partakes more of the nature and character of this kind of poem: besides, the epigram, being only a single thought, ought to be expressed in a little compass, or else it loses its force and strength.

The point is a sharp, lively, unexpected turn of wit, with which an epigram ought to be concluded. There are some critics, indeed, who will not admit the point in an epigram, but require the thought to be equally diffused through the whole poem, which is usually the practice of Catullus, as the former is that of Martial. It is allowed, there is more delicacy in the manner of Catullus, but the point is more agreeable to the general taste, and seems to be the chief characteristic of the epigram. This sort of poem admits of all manner of subjects, provided that brevity, beauty, and point, are preserved; but it is generally employed either in praise or satire.

EPILEPSY, in medicine, the same with what is called the falling-sickness, from the patient's falling suddenly to the ground.

Sometimes this disease comes upon the patient unawares; but it more frequently gives notice of its approach, by a lassitude of the whole body, a heavy pain in the head, with some disturbance of the senses, unquiet sleep, unusual dread, dimness of sight, and a noise in the ears; in some there is a violent palpitation of the heart, a puffing or inflation of the breast, difficult respiration, a murmuring noise in the belly, foetid stools, a flux of the urine, and a refrigeration of the joints: in others, there is a sensation as it were of cold air, ascending from the extreme parts towards the brain and heart. At length, falling senseless to the ground, the thumbs are shut close up in the palms of the hands, and are with difficulty taken out; the eyes are distorted or inverted, so as nothing but the whites appear: all sensation is suspended, insomuch that no smell, no noise, nor even pinching of the body is able to bring them to themselves: they froth at the mouth with a hissing kind of noise; the tongue

is lacerated, or torn by the teeth, and there is a shaking or trembling of the joints. However, in different patients the symptoms vary; for sometimes, instead of convulsive motions, the limbs are all stiff, and the patient is as immoveable as a statue: in infants the penis is erected; and in young men, there is an emission of the semen, and the urine sometimes streams out to a great distance. At last there is a remission of the symptoms, and the patients come to themselves after a longer or shorter interval; then they complain of a pain and heaviness of the head, and a lassitude of all their joints.

These fits usually return on certain days, or age of the moon, but especially about the new or full moon; in women, chiefly about the time of menstruation, and as to the prognostics they generally leave the patient about the time of puberty.

As to the cure, in adults, or grown persons, it is extremely difficult; but in children, it is just the reverse. Blisters laid on the back part of the head are of great use a little before the fit is expected; which may the more certainly be foreknown, as this disease is influenced by the moon. The most proper medicines to correct the juices seem to be native cinnabar, and wild valerian root; a dram of which may be taken morning and evening for three or four months, and afterwards two or three days before the new and full moon. Or, two scruples of the powder of wild valerian root, mixed with one of that of native cinnabar, may be taken morning and evening. Ambergrise and musk are also accounted excellent.

It must not however be forgot, that this disease owes its origin to so many different causes, and is bred in so many different constitutions of the body, that the same remedy which succeeds in one case, often fails in another, and, therefore, different medicines are to be tried, especially in adults.

According to Dr. Cheyne, a milk-diet will cure the most inveterate epilepsy. Mistletoe is also said to cure it, as sure as the bark does an intermitting fever: its dose, to grown people, is half a dram or more, in powder, to be taken every sixth hour, drinking after it a draught of a strong infusion of the same plant; and if to every ounce of the powder, a dram of asa-foetida be added, the medicine will be still more effectual. Cinnabar of antimony is also greatly celebrated for the cure of this disease, and may be taken from
four

four grains to a scruple, in conserve of rosemary-flowers. If the disease is inveterate, some advise to give the following pills for a month, viz. Take castor and gum ammoniac, of each eight grains; wild valerian-root, half a scruple; salt of tartar, seven grains; and as much of tincture of castor as is sufficient to form them into pills, one of which makes a dose. On every seventh day, a cathartic should be given; and sometimes instead of the castor and gum, filings of steel may be substituted.

A decoction of guaiacum, or sassafras, taken twice a day, six or eight ounces at a time, and continued for thirty or forty days, is also said to cure the epilepsy; especially if male piony-root or the like, be added.

The following electuary is also recommended as a most excellent and certain anti-epileptic. Take of Peruvian bark, pulverised, six drams; of Virginia snake-root, likewise pulverised, two drams; and of the syrup of piony-flowers, as much as is sufficient to make a soft electuary. The dose, after proper evacuations, in adults is a dram; which should be taken morning and evening for three or four months: and afterwards only repeated three or four days before the new and full moon.

EPILOBIUM, in botany, the willow herb, a genus of plants.

EPILOGUE, in oratory, the conclusion of a discourse, ordinarily containing a recapitulation of the principal matters delivered.

EPILOGUE, in dramatic poetry, a speech addressed to the audience after the conclusion of the play, by one of the principal actors therein, usually containing some reflections on certain incidents in the play, especially those in the part of the person that speaks it.

In the modern tragedy the epilogue has usually somewhat of pleasantry, intended, in all probability, to compose the passions raised in the course of the representation. This is ridiculed by the Spectator, and compared to a merry jig upon the organ, after a good sermon, to wipe away any impressions that might have been made thereby, and send the people away just as they came. This practice, however, has the countenance of antiquity, for the Romans had something of the same nature, though under a different name; but their exordium was a kind of farce or pantomime, brought on the stage when the tragedy

was over, to compose the minds of the audience.

EPIMEDIUM, barrenwort, in botany, a genus of plants.

* **EPIMETHEUS**, in fabulous history, son of Japetus, and brother to Prometheus, married Pandora, and though warned of the danger, opened the fatal box presented her by Jupiter, by which means vice, folly, and diseases, overspread the earth. He had by Pandora a daughter, named Pyrrha, who married Deucalion; but Jupiter metamorphosed him into an ape, and banished him.

EPIPHANY, a christian festival, observed on the sixth of January, in honour of the appearance of our Saviour to the three magi, or wise men, who came to adore him and bring him presents. The kings of England and Spain offer gold, frankincense, and myrrh, on epiphany or twelfth-day, in memory of the offerings of the wise men to the infant Jesus.

EPIPHORA, in medicine, a preternatural deflection of the eyes, when they continually discharge a sharp serous humour, which excoriates the cheeks. The cure is performed by a derivation of the offending humour elsewhere, by bleeding, cupping, blisters, purges, &c. The acrimony is likewise to be corrected by bitter chalybeate wine: sometimes wine drank alone will perform the cure; after which, astringent topics are to be made use of. See *Rheum*.

If an epiphora has been of long standing, it is difficult to be cured, and often degenerates into a fistula lachrymalis. See *Fistula Lachrymalis*.

EPIPHYSIS, in anatomy, a bony substance, or as it were a lesser bone affixed to a larger or principal bone, by the intervention of a cartilage. In young people these epiphyses are not continuous to the principal bone, but are only connected by the intermediate cartilage, and hence they are called appendages to the bones. It is to be observed of epiphyses, 1. That they are all cartilaginous in infants; and though they afterwards grow hard, yet they never arrive at the true density of a bone. 2. That most of them degenerate into apophyses in adults. 3. That they do not grow along the plain surface of the bone, but unequally, or by a mutual ingress with the body of it.

EPIPLOCELE, in medicine, a kind of hernia, or rupture, in which the omentum subsides into the scrotum.

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EPIPLOIS, in anatomy, a term applied to the arteries and veins distributed through the substance of the epiploon or caul.

EPISCOPACY, the quality of episcopal government; or that form of church discipline, wherein diocesan bishops are established distinct from and superior to priests or presbyters. See *Bishop*.

EPISCOPAL, belonging to bishops. See *Bishop and Episcopacy*.

EPISCOPALIANS, in church-history, an appellation given to those who prefer the episcopal government and discipline to all others.

EPISODE, in poetry, a separate incident, story, or action, which a poet invents, and connects with his principal action, that his work may abound with a greater diversity of events: though, in a more limited sense, all the particular incidents whereof the action or narration is compounded, are called episodes. The episode, in its original, was only something rehearsed between the parts of the chorus or ancient tragedy, for the diversion of the audience. Episodes serve to promote the action, to illustrate, embellish, and adorn it, and carry it to its proper period. Episodes are either absolutely necessary, or very requisite. All episodes are incidents, though all incidents are not episodes: because some incidents are not adventitious to the action, but make up the very form and series of it. Examples will clear up this distinction: the storm in the first *Æneid* of Virgil, driving the fleet on the coast of Carthage, is an incident; not an episode, because the hero himself and the whole body of his forces are concerned in it; and so it is a direct and not a collateral part of the main action. The adventures of Nisus and Euryalus, in the ninth *Æneid*, are episodes, not incidents, i. e. not direct parts of the main action.

Though the episodes are a kind of digression from the subject, yet they ought to have a natural relation to the principal action, never be far-fetched, and must be handled with judgment, to avoid confusion and burdening the subject with too much action.

Homer and Virgil have shewn their principal art in their episodes: the action of the *Iliad* and that of the *Æneid* were in themselves exceeding short, but are so beautifully lengthened and diversified by the intervention of episodes, that they make up an agreeable story, sufficient to employ the memory without overcharging

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it. Our noble poet Milton has excelled in this art; he has no other episodes than what naturally arise from the subject, and yet the poem of *Paradise Lost* is filled with a multitude of astonishing incidents. Those great actions, the battle of the angels, and the creation of the world, are by way of episode to this noble poem. With the like art, and in the same manner, in that part of it which regards the fall of man, he has related the fall of those angels who are his professed enemies.

EPISPASTIC, in medicine, a topical remedy, which being applied to the external parts of the body, attracts the humours to that part.

EPISTLE, a missive letter: but is now chiefly used in speaking of ancient writings, as the *Epistles* of St. Paul, *Epistles* of Cicero, *Epistles* of Pliny, &c. See *Letter*.

EPISTOLARY, sometimes belonging to an epistle.

The art of a epistolary writing is acknowledged to be very entertaining and instructive. The Romans ranked it in the number of liberal and polite accomplishments. And, indeed, it enters so much into all the occasions of life, that no gentleman can avoid shewing himself in this kind of composition.

EPISTROPHE, in rhetoric, a figure, wherein that which is supposed of one thing, is strongly affirmed of another: thus, "Are they Hebrews? so am I. Are they Israelites? so am I. Are they of the seed of Abraham? so am I," &c.

EPIGRAPH, a monumental inscription, generally containing some eulogium of the virtues and good qualities of the deceased, and has a turn of seriousness and gravity adapted to the nature of the subject. The elegance of epitaphs consists in a nervous and expressive brevity; and sometimes are closed with an epigrammatic point. Though the true characteristic of the epitaph is seriousness and gravity, yet we find many that are jocular and ludicrous; some likewise have true metre and rhyme, while others are between prose and verse, without any certain measure, though the words are truly poetical, and the beauty of this last sort is generally heightened by an apt and judicious antithesis.

EPITASIS, in ancient poetry, the second part or division of a dramatic poem, wherein the plot, entered upon in the first part, or protasis, was carried on, heightened and worked up till it arrived at its state or height, called *catastasis*.

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This division of tragedy is laid aside in the modern drama, instead of which plays are divided into acts. See *Act*.

EPITHALAMIUM, in poetry, a nuptial song, or composition, in praise of the bride and bridegroom, praying for their prosperity, for a happy offspring, &c.

EPITHEM, in pharmacy, a kind of fomentation, or remedy of spirituous aromatic kind, applied externally to the regions of the heart, liver, &c. to strengthen and comfort the same, or to correct some intemperature thereof. See *Fomentation*.

They may be divided into liquid and dry. The dry epithems are medicated powders, usually sewed up in a cloth, and applied to different parts of the body; for which purpose the powders must be coarse. Sometimes the liquid epithems are added to the dry, to reduce the whole to a consistence, such as may be spread upon cloth, and applied.

EPITHET, in poetry and rhetoric, an adjective expressing some quality of a substantive to which it is joined; or such an adjective as is annexed to the substantives by way of ornament and illustration, not to make up an essential part of the description. Nothing is so essential in poetry as proper use of them. The writings of the best poets are full of them, especially Virgil.

EPITOME, in literary history, an abridgement or summary of any book. See *Abridgement*.

EPITRITUS, in prosody, a foot consisting of three long syllable and one short.

EPOCHA, in chronology, a term or fixed point of time, whence the succeeding years are numbered or accounted. See *Æra*.

The most remarkable epochas are those that follow.

EPOCHA of the creation of the world. See *Chronology*.

EPOCHA of the deluge. According to the Hebrew text, there are 1656 years from the creation to the deluge; 1307, according to the Samaritan; 2242, according to Eusebius and the Septuagint; 2256, according to Josephus and the Septuagint; 2262, according to Julius Africanus, Petavius, and the Septuagint; and 2255, according to Jackson. In following the Hebrew text, this epocha begins in the year 2366 of the Julian period.

EPOCHA of the Olympiads, used principally by the Greeks, had its origin from the Olympic games, which were celebrated at the beginning of every fifth

year. This epocha begins 776 years before the incarnation, or in the 3938th of the Julian period.

Varronian EPOCHA of the building of Rome, is fixed 753 years before our Saviour's birth, and in the 3961st of the Julian period.

EPOCHA of Nabonassar king of Babylon, made use of by Ptolemy, Centorinus, and several other authors, began 747 years before the incarnation, and in the 3967th of the Julian period.

Julian EPOCHA. The first year of Julius Cæsar's correcting the calendar stand 45 years before our Saviour's birth, and coincides with the 4669th of the Julian period.

EPOCHA of Christ. The Christian world generally reckoned from the epocha of the creation, the building of Rome, the consuls register, or the emperor's reign, till about 500 years after Christ, when the epocha of the nativity of our blessed Lord was introduced by Dionysius Exiguus. He began his account from the conception or incarnation, properly called Lady-day. Most countries in Europe, however, at present reckon from the first of January next following, except the court of Rome, where the epocha of the incarnation still obtains for the date of their bulls and briefs.

But here we are to observe, that there are different opinions touching the year of our Saviour's birth. Capellus and Kepler fix it at about the 748th year from the building of Rome. Decker and Petavius place the incarnation in the 749th of Rome. Scaliger and Vossius make it fall on the 751st of Rome. Dionysius Exiguus, Bede, &c. fix the birth of our Saviour to the year 751 of Rome. But let this be as it will, it is generally agreed, that as to computation and use, the common epocha is to be followed, which places the birth of Christ in the 4713th of the Julian period, although the true birth rather corresponds with the 4711th of the same period.

Dioclesian EPOCHA, or **EPOCH**A of martyrs, called also the æra of the copti or Egyptians, because the emperor Dioclesian made a great many martyrs in Egypt, begins in the year 283 of our Lord, and the 4997th of the Julian period.

EPOCHA of the hegira, or flight of Mahomet, used among the Turks, is the year of the Julian period 5335, answering to the year of Christ 622.

Yezdegerd, or Persian EPOCHA, is the year of the Julian period 5345, answering to the year 622.

EPODE, in lyric poetry, the third or last part of the ode, the ancient ode being divided into strophe, and antistrophe, and epode. See *Ode*, &c.

The epode was sung by the priests, standing still before the altar, after all the turns and returns of the strophe and antistrophe, and was not confined to any precise number or kind of verses.

The epode is now a general name for all kinds of little verses that follow one or more great ones, of what kind soever they be; and in this sense a pentameter is an epode after an hexameter. And as every little verse, which being put after another, closes the period is called epode; hence the sixth book of Horace's odes is entitled, *Liber Epodon*, Book of Epodes, because the verses are all alternately long and short, and the short ones generally, though not always, close the sense of the long one.

EPOPOIEA, in poetry, the story, fable, or subject treated of in an epic poem. The word is commonly used for the epic poem itself.

EQUABLE, an appellation given to such motions as always continue the same in degree of velocity, without being either accelerated or retarded.

EQUAL, a term of relation between two or more things of the same magnitude, quantity, or quality.

EQUALITY, that agreement between two or more things whereby they are denominated equal.

The equality of two quantities, in algebra, is denoted by two parallel lines placed between them: thus, $4 + 2 = 6$, that is, 4 added to 2, is equal to 6.

EQUANIMITY, in ethics, that even and calm frame of mind and temper under good or bad fortune, whereby a man appears to be neither puffed up, or overjoyed with prosperity; nor dispirited, soured, or rendered uneasy by adversity.

EQUATION, or **ÆQUATION**, in algebra, an expression of the same quantity, in two different, that is, dissimilar, but equal terms or denominations.

As, when we say $2 \times 3 = 4 + 2$, that is, twice three is equal to four and two.

Stifelius defines equation to be the ratio of equality between two quantities differently denominated; as when we say, 3 shill. = 36 pence. Or, 50 shill. = 2l. 10s. 50 shill. = 600 pence = 24⁰⁰ farth.

Or. $b = d + e$. Or, $12 = \frac{10-1}{3}$, &c.

Hence, the reduction of two heterogeneous, or dissimilar quantities of the same value, i. e. to an equality, is called the bringing them to an equation.

The character or sign of an equation is =.

The resolution of problems by means of equations, is the business of algebra.

Terms of an EQUATION are the several quantities, or parts, of which an equation is composed, connected together by the signs + and -. Thus, in the equation $b - c = d$; the terms are b , c , and d , and the tenor or import of the equation is, that some quantity, represented by d , is equal to two others represented by b and c .

Root of an EQUATION is the value of the unknown quantity in the equation. Thus, if $a^2 + b^2 = x^2$, the root x will be $\sqrt{a^2 + b^2}$. See *Roots of Equations*.

Simple EQUATION is that wherein the unknown quantity is only of one dimension, or in the first power, as $x = a + b$.

Quadratic EQUATION is that wherein the unknown quantity is of two dimensions, or in the second power, as $x^2 = a^2 + b^2$. See *Quadratic Equation*.

Cubic EQUATION is that wherein the unknown quantity is of three dimensions, as $x^3 = ax - bx$, &c.

Construction of EQUATIONS. See *Geometrical Construction of Equations*.

EQUATION of Time, in astronomy, the reducing of the apparent, unequal time, or motion of the heavenly bodies to equable or mean time, or motion.

Since the diurnal motion of the earth about its axis is equable, every revolution will be performed in the same time, and therefore all the sidereal days, and the hours of those days, will be equal.

And on the other hand, the solar days are all unequal, and that on two accounts; to wit, because of the ecliptic figure of the earth's orbit, and because of the obliquity of the ecliptic to the equator.

The true motion of the earth precedes the mean in the first semicircle of anomaly, and is preceded by the mean in the second: therefore, while the earth is going from the aphelion to the perihelion, or while the sun apparently moves from the apogæum to the perigæum, the apparent time before the mean; and in the other semicircle of anomaly it will be after it. The difference of these motions, converted into time, is the equation of time in this respect, and it is to be subtracted

tracted from the apparent time to gain the mean, or added to the mean to gain the apparent, in the first semicircle of anomaly, and *vice versa*.

Now both these parts of the equation of time are calculated by astronomers for every degree of anomaly, and for every degree of the sun's longitude in the ecliptic, and disposed in two several tables, with directions for adding and subtracting, as the case requires; so that at all times, the true or equal time may be had. And

from thence it appears, that apparent time, or that shewn by the sun, namely, by a sun-dial, is but four days in the whole year the same with the mean or equal time shewn by a good clock or watch, to wit, about the fifteenth of April, the sixteenth of June, the thirty-first of August, and the twenty-fourth of December. Also about the first of November, the equation is greatest of all the year, being then about 16' 13"; clocks being then much slower than sun-dials.

Mr. FLAMSTEAD's TABLE of the EQUATION of natural Days, with the Regulation of a Movement by the same.

Days.	Januar.	Feb.	March	April	May	June	July	August	Sept.	Octob.	Nov.	Dec.
1	4	13	48	1	8	47	8	46	18	23	16	32
2	4	12	36	43	16	38	19	42	0	42	16	10
3	5	12	23	25	23	29	31	38	0	16	13	9
4	5	11	9	6	30	19	42	33	1	0	16	45
5	5	11	55	48	36	9	52	28	1	18	12	20
6	5	10	41	30	42	59	2	22	1	36	10	55
7	6	10	26	13	47	48	12	15	1	10	8	29
8	6	9	11	3	51	37	22	8	2	16	4	3
9	7	9	11	55	55	26	31	0	2	43	0	37
10	7	8	40	21	58	14	40	52	3	12	54	10
11	8	8	24	4	0	2	48	43	3	13	48	42
12	8	7	7	48	2	50	56	44	3	13	41	14
13	9	7	50	32	4	38	4	34	3	13	34	46
14	9	6	33	16	5	26	11	24	4	14	25	18
15	10	6	16	1	5	13	17	13	4	14	16	49
16	10	5	8	14	5	1	4	2	5	14	55	19
17	11	5	58	29	4	12	11	50	5	14	43	50
18	11	4	40	43	4	5	23	38	6	14	30	20
19	11	4	22	57	5	38	29	26	6	14	16	51
20	12	3	16	1	5	1	17	13	6	14	2	21
21	12	3	8	43	5	1	4	2	7	14	46	51
22	12	2	4	11	5	3	3	59	7	15	1	20
23	12	1	27	24	5	16	46	45	7	15	30	50
24	12	0	9	37	5	3	49	30	7	15	46	20
25	12	0	50	49	5	3	51	15	8	15	13	56
26	12	0	31	1	5	42	54	0	8	15	38	10
27	13	0	13	12	5	37	55	44	8	15	18	38
28	13	0	54	43	5	31	55	28	8	15	58	1
29	13	0	16	33	5	25	54	11	9	16	1	2
30	13	0	35	43	5	20	54	11	9	16	38	10
31	14	0	39	52	5	14	49	19	9	16	55	37

EQUATOR, in geography, a great circle of the terrestrial globe, equidistant from its poles, and dividing it into equal hemispheres; one north, and the other south. See *Globe*.

It passes through the east and west points of the horizon, and at the meridian is raised as much above the horizon as is the complement of the latitude of the place. From this circle, the latitude of places, whether north or south, begin to be reckoned, in degrees of the meridian. See *Latitude* and *Meridian*.

All people living on this circle, called by geographers and navigators the line, have their days and nights constantly equal. It is in degrees of the equator that the longitude of places are reckoned; and as the natural day is measured by one revolution of the equator, it

follows that one hour answers to $\frac{360}{24} = 15$

degrees: hence one degree of the equator will contain four minutes of time; fifteen minutes of a degree will make a minute of an hour; and consequently, four seconds answer to one minute of a degree.

EQUERRY, an officer of state, under the master of the horse.

There are five equerries, who ride abroad with his majesty; for which purpose they give their attendance monthly, one at a time, and are allowed a table.

As to the equerries of the crown stable, they have this distinct appellation, as being employed in mounting, managing, and breaking the saddle-horses for his majesty's use, and holding his stirrup.

EQUESTRIAN STATUE, the statue of a person mounted on horseback.

EQUESTRIAN ORDER, among the Romans, signified their knights, or equites; as also their troopers, or horsemen in the field; the first of which orders stood in contradistinction to the senators, as the last did to the foot, military, or infantry: each of these distinctions was introduced into the state by Romulus.

EQUIANGULAR, in geometry, an epithet given to figures whose angles are all equal: such are a square, an equilateral triangle, &c.

EQUIDISTANT, placed at equal distance from some fixed point, or place.

EQUILATERAL, in general, something that hath equal sides, as an equilateral angle.

EQUILATERAL HYPERBOLA, one whose transverse diameter is equal to its parameter; and so all the other diameters, equal to their parameters: in such

an hyperbola, the asymptotes always cut one another at right angles in the center.

EQUILIBRIUM, in mechanics, is when the two ends of a lever or ballance hang so exactly even and level, that neither ascends or descends, but keep in a position parallel to the horizon; which is occasioned by their being both charged with an equal weight.

EQUIMULTIPLES, in arithmetic and geometry, numbers or quantities multiplied by one and the same number or quantity. Hence, equimultiples are always in the same ratio to each other, as the simple quantities before multiplication: thus, if 6 and 8 are multiplied by 4, the equimultiples 24 and 32 will be to each other as 6 to 8.

EQUINOCTIAL, in astronomy, a great circle of the celestial globe, whose poles are the poles of the world.

It is so called, because whenever the sun comes to this circle, the days and nights are equal all over the globe; being the same with that which the sun seems to describe at the time of the two equinoxes of spring and autumn. See *Equinox*.

All stars, directly under this circle, have no declination, and always rise due east, and set full west. The hour-circles are drawn at right angles to it, passing through every fifteenth degree, and the parallels to it are called parallels of declination. See the articles *Declination* and *Circle*.

EQUINOX, the time when the sun enter either of the equinoctial points, where the ecliptic intersects the equinoctial. It is so called, because when the sun is in these points, the days and nights are of an equal length all the world over. As the sun is in one of them, in the spring, viz. March 20th, it is called the vernal equinox; and in the other, in autumn, viz. September 23d, it is called the autumnal equinox.

EQUISETUM, horsetail, in botany, a genus of plants, and order of filices, or fern. The plant itself consists of jointed stalks, in some simple, in others branched; producing setæ, or smaller divisions, of the same structure with the larger ones.

EQUITY, the virtue of treating all other men according to common reason and justice, or as we would be treated ourselves, when we understand aright what is our due.

EQUITY of Redemption, in our law, is applied to mortgages, as where money being

due on a mortgage, the mortgagee is desirous to bar the mortgager's equity of redemption, that is, his right to redeem the mortgage. In this case the mortgagee may oblige the mortgager, either to pay the money, or to be foreclosed of his equity of redemption. The practice is to exhibit a bill in chancery. See *Mortgagee*.

EQUITY also frequently signifies the court of chancery, where controversies are determined according to the exact rules of equity and conscience, by mitigating the rigour of the common law. See *Chancery*.

EQUIVALENT, an appellation given to things which agree in nature, or other circumstances.

EQUIVOCAL TERMS, or *Words*, among logicians, those which have a doubtful, or double meaning.

EQUIVOCAL GENERATION, the production of animals, without the intercourse between the sexes, by the influence of the sun or stars, &c.

The equivocal generation of plants, is their production without seed, in the ordinary course of nature. See *Generation*. This kind of generation is now quite exploded by the learned.

EQUIVOCATION, in ethics, the crime of wilfully using equivocal terms.

EQUULEUS, in astronomy, a constellation of the northern hemisphere, whose stars, according to Ptolemy, and Tycho's catalogues are four, but in Mr. Flamsteed's ten.

ERASED, in heraldry, the same with arrache. See *Arrache*.

* **ERATO**, in fabulous history, one of the Muses. She presided over elegiac or amorous poetry, and dancing, and is represented as a young maiden crowned with myrtle and roses, with a lyre in her right hand, and a bow in her left; with a little winged Cupid placed by her, armed with his bow and arrows.

ERECT DIAL. See *Dial*.

ERECTOR CLITORIS, in anatomy, one of the two muscles of the clitoris that serve for its erection.

ERECTOR PENIS, one of the two muscles of the penis, that serve for its erection.

ERIGERON, sweet fleabane, in botany. This plant is a diuretic, and promotes the menses: the smell of it drives away fleas, and kills lice, &c.

* **ERIGONE**, in fabulous history, the daughter of Icarus, was so grieved at the murder of her father that she hanged her-

self, on which Jupiter, to reward her filial piety, took her into the heavens, and placed her in the constellation Virgo.

ERMIN, *Ermineum*, in zoology, a creature whose skin is the ermin, so much esteemed as a fine fur. This creature is properly a species of weasel, and is called by Mr. Ray, and other authors, *Mustela candida*, the white weasel. It is in all respects like the common weasel, and is all over of a pure snow white, except the tip of the tail, which is of as beautiful a black; and it has yellowish grey about the eyes, and a mark or spot, of the same colour on the head, another on the shoulder, and a third near the tail. Its colour is, however, very different in degree and elegance, according to the season of the year. It is frequent about rivers, and in meadows, in those countries which produce it, and feeds on moles, mice, and other small animals.

ERMIN, in heraldry, is always argent and sable, that is, a white field, or fur, with black spots. These spots are not of any determinate number, but may be more or less, at the pleasure of the painter, as the skins are thought not to be naturally so spotted; but serving for lining the garments of great persons, the furriers were wont, in order to add to their beauty, to sow bits of black tails of the creatures that produced them, upon the white of their skin, to render them the more conspicuous, which alteration was introduced into armory.

ERMINE', or cross ermine', is one composed of four ermine spots. It is to be observed, that the colours in these arms are not to be expressed, because neither this cross, nor these arms, can be of any other colour but white and black.

ERMINITES expresses a white field powdered with black, only that every such spot hath a little red hair on each.

Erminites also signify a yellow field powdered with black, which the French express much better by *semée d'ermine de sable*.

EROSION, among physicians, denotes much the same with corrosion, only in a stronger degree.

ERRATA, a list of the errors in the impression of a book.

ERRATIC, something that wanders, or is not regular: hence it is that the planets are called erratic stars.

ERRHINES, in pharmacy, medicines which, when snuffed up the nose, promote a discharge of mucus from that part.

ERROUR,

E R Y

ERROUR, ERROR, in philosophy, a mistake of our judgment, given assent to that which is not true. Mr. Locke reduces the causes of error to these four; first, want of proofs; secondly want of ability to use them; thirdly, want of will to use them; and fourthly, wrong measures of probability.

ERUCA, the white rocket, in botany, a species of brassica.

ERUCA, wild rocket, in botany, a genus of plants whose Virtues are aperitive, incisive, and diuretic. Matthioli affirms, that, being boiled with a little sugar, it is good for the cough in children, which is generally occasioned by glutinous matters, irritated in the bronchia and vesicles of the lungs.

ERUCTATIONS, in medicine, the effects of flatulent foods, and the crudities thence arising. See *Flatulency*.

ERUDITION, *eruditio*, an extensive acquaintance with books, especially such as treat of the Belles Letters.

ERUPTION, in medicine, a sudden, and copious excretion of humours, as pus or blood: it signifies also the same with exanthema, any breaking out, as the pustules of the plague, small-pox, measles, &c.

ERYNGIUM, **ERINGO**, in botany, a genus of plants. The root of which is attenuant and deobstruent, and is therefore esteemed a good hepatic, uterine, and nephritic. Its whole virtue consists in the external or cortical part.

ERYSIMUM, hedge mustard, in botany. This plant is recommended in paralytic and epileptic cases; it expels poison, destroys worms, strengthens the stomach, and cures ulcers of the mouth.

ERYSIPELAS, otherwise called St. Anthony's fire, that species of inflammation, which arising in the skin, and its subjacent fat, sometimes spreads itself very far, and is accompanied with redness, heat, and pain. The part affected, when pressed with the finger, becomes remarkably white; but, soon after its removal, resumes its former redness.

Though inflammations of this kind generally arise on the arms and legs, yet they sometimes happen on the neck, the head, the shoulders, nose, and other parts. Upon the first approach of this disorder, the patient is almost always seized with a shivering and coldness, which are soon succeeded by a degree of heat, equal to that perceived in burning fevers: for this reason, it is often called *ignis sacer*, both by ancient and modern authors.

E S C

Great attention is to be given to that fever which is accompanied with an erysipelas, for in this, besides the pain, thirst, and restlessness, which the patient suffers, the pustules on various parts of the body sometimes run into gangrenes.

Wherefore, the first thing to be done is to draw blood pretty plentifully; and then to purge once or more with gentle cathartics, as infusion of senna with manna, for such only are proper in fevers. And indeed there is no acute fever that bears repeated purging better than this, especially when the inflammatory tumour has seized the head: for the humour spreads very fast, and soon gains the neighbouring parts.

But it is dangerous to apply hot fomentations, in order to discuss the morbid matter; and much more so to repel it with cooling ointments, or liniments: but if the skin in any part be gangrened, that part is to be fomented with a decoction of bitter herbs, mixed with camphorated spirit of wine; and afterward a cataplasm of oatmeal boiled in strong beer is to be laid on warm, and to be renewed as often as found necessary. *Mead.*

ERYTHROIDES, in anatomy, the first of the proper tunics or coats which cover the testicles. See *Testicle*.

ERYTHRONIUM, dog's tooth-violet, in botany.

The root of this plant is recommended against the cholic, epilepsy, and worms: it is also reckoned a provocative to venery.

ESCALADE, or **SCALADE**, in the art of war. See the article *Scalade*.

ESCAPE, in law, a violent or privy evasion out of some lawful restraint, without being delivered by due course of law.

ESCAPE-WARRANT, a process which issues out against a person committed in the King's bench or Fleet-prisons, that, without being duly discharged, takes upon him to go at large.

Upon this warrant, which is obtained on oath, a person may be apprehended on a Sunday.

ESCALOT, *Cepa Ascalonica*, a species of onion cultivated in gardens for its use in cookery. See *Onion*.

ESCHEAT, in law, signifies any lands or tenements that casually fall to a lord within his manor, by way of forfeiture, or by the death of his tenant, without any heirs general or special.

ESCHRAKITES, in matters of religion, a sect of Mahometans, who believe that man's sovereign good consists in the con-

contemplation of God. They avoid all manner of vice, and appear always in good humour, despising the sensual paradise of Mahomet. The most able preachers, in the royal mosques, are of this sect.

ESCORT, in the art of war, the same with convoy. See the article *Convoy*.

ESCULENT, an appellation given to such plants, or the roots of them, as may be eaten: such are beets, carrots, artichokes, leeks, onions, parsnips, potatoes, raddishes, scorzonera, &c.

ESCULUS, the horse-chestnut, a genus of trees.

ESCUTCHEON, or **SCUTCHEON**, in heraldry, is derived from the French *escuillon*, and that from the Latin *scutum*, and signifies the shield whereon coats of arms are represented. Most nations of the remotest antiquity, were wont to have their shields distinguished by certain marks painted on them; and to have such on their shields was a token of honour, none being permitted to have them till they had performed some honourable action.

The escutcheon, as used at present, is square, only rounded off at the bottom.

As to the bearings on shields, they might at first be arbitrary, according to the fancy of the bearer; but in process of time, they came to be the gift of kings and generals, as the reward of honourable actions.

ESCUTCHEON of Pretence, that on which a man carries his wife's coat of arms, being an heiress, and having issue by her. It is placed over the coat of the husband, who thereby shows forth his pretensions to her lands.

ESDRAS, the name of two apocryphal books, usually bound up with the Scriptures. They were always excluded the Jewish canon, and are too absurd to be admitted as canonical by the papists themselves.

ESPALIERS, in gardening, are rows of trees planted about a whole garden or plantation, or in hedges, so as to inclose quarters or separate parts of a garden, and are trained up regularly to a lattice of wood-work in a close hedge, for the defence of tender plants against the injuries of the wind and weather. They are of admirable use and beauty in a kitchen-garden, serving not only to shelter the tender plants, but screen them from the sight of persons in the walks.

The trees chiefly planted for espaliers, are apples, pears, and some plums; but the two former are mostly used: some

plant espaliers of apples grafted upon paradise stocks; but these, being of a short duration, are not so proper for this purpose; therefore I should rather advise the having them upon crab stocks, or (if in small gardens, where the trees cannot be allowed to grow so high) upon what the gardeners call the Dutch stock; which will cause them to bear much sooner, and prevent their growing too luxuriant.

In chusing the trees for an espalier, endeavouring as near as possible, to plant the several sorts which are nearly of the same growth in one line, that the espalier may be the more regular, and of an equal height, which greatly adds to their beauty; for if you plant trees which shoot very unequally in the same line, it will be impossible to make the espalier regular: besides, the distance the trees are to be planted must be directed hereby; for some trees, viz. those of a larger growth, should be planted twenty-five or thirty feet asunder; whereas those of smaller growth need not be above sixteen or eighteen feet distance from each other.

The width of the walks between these espaliers should (in a large garden) be fourteen or sixteen feet at least; and, if they are designed to be carried up pretty high, the distance should be greater, that each side may receive the advantage of the sun and air, which is absolutely necessary, if you would have the fruit well tasted; and if your ground is so situated, that you are at full liberty which way to make the espaliers, I would advise the placing the lines from the east a little inclining to the south, and towards the west a little inclining to the north, that the sun may shine between the rows in the morning and evening, when it is low; for in the middle of the day, when the sun is advanced far above the horizon, it will shine over the tops of the espaliers, and reach the surface of the earth about their roots; which is a matter of more consequence than many people are aware of.

The sorts of apples proper for espaliers are the golden pippin, nonpareil, rennette, grise, aromatic pippin, Holland pippin, French pippin, Wheeler's ruffet, Pile's ruffet, with several others.

The sorts of pears proper for an espalier are summer and autumn fruits; for some of the winter pears seldom succeed well in an espalier. These trees, if designed for a strong moist soil, should be upon quince stocks; but if for a dry soil, upon free stocks. Their distance of planting must also

also be regulated by the growth of the trees, which are more unequal in pears than apples, and should therefore be more carefully examined before they are planted. As for those pears upon free stocks, the distance should never be less than twenty-five feet for moderate growing trees; but, for vigorous shooters, the space of thirty or five and thirty feet is little enough, especially if the soil be strong, in which case they should be planted at a greater distance. The particular sorts of pears I would recommend for an espalier, are the jargonelle, blanguette, poier fans peau, summer boncretien; Hambden's burgamot, poir du prince, autumn, burgamot, l'ambrette, gros roufflet, beurre du roy, le marquis, creffane, with many others of less note, always remembering that those pears which are of the melting kind, will do better in espaliers than the breaking pears, which seldom ripen well on espaliers: you should also be careful of the stocks these are grafted on; for if the breaking pears are grafted on quince stocks, the fruit will be stony.

Fruit-trees thus planted, and well managed, are much preferable to those trained up in any other figure, upon several accounts: as, first, these take up very little room in a garden, so as to be hurtful to the plants which grow in the quarters; and, secondly, the fruit upon these are better tasted than those which grow upon dwarfs, the sun and air having freer access to every part of the tree, whereby the dampness arising from the ground is sooner dissipated; which is of singular advantage to fruit-trees. *Miller's Gard. Dict.*

ESPLANADE, in fortification, the sloping of the parapet of the covert-way towards the champaign.

ESPOUSALS, in law, a contract or promise made between a man and a woman, to marry each other.

ESQUIRE, *Armiger*, was anciently the person that attended a knight in time of war, and carried his shield.

ESSAY, in literature, a particular kind of composition, the character of which is to be free, easy, and natural; not tied to strict order or method, nor worked up and finished like a formal system.

ESSENCE, that which constitutes the peculiar nature of any thing, and makes it to be what it is. In philosophy, the essence of a thing is that which is the primary conception which one has of it, and is distinguished from its act, which is called its existence. Thus the essence of a rectilinear triangle, consists in its being

bounded by three straight lines; of a circle, in that its radii or semi-diameters are all equal; and the essence of a square is, that it hath four right angles and four equal right-lined sides.

ESSENCE, in chemistry, is the most pure, balsamic, and subtile parts, which have been extracted from any body by means of fire.

ESSENTIAL, something necessary belonging to the essence or nature of a thing, from which it cannot be conceived distinct: thus the primary qualities of bodies, as extension, figure, number, &c. are essential or inseparable from them in all their changes and alterations.

* ESSEX, a large populous county, bounded on the east by the German Sea, on the west by the river Stort, which divides it from Hertfordshire, and by the river Lea, which parts it from Middlesex; on the south by the river Thames which separates it from Kent, and on the south-east by part of Cambridgeshire and Suffolk, from which last it is divided by the river Stour. It is fifty miles in length, and forty-seven in breadth. It contains twenty hundreds, twenty-two market-towns, four hundred and fifteen parishes, forty-six parks, one forest, one million two hundred and forty thousand acres of land, thirty-four thousand eight hundred and nineteen houses, and two hundred and thirty-eight thousand eight hundred souls. It sends eight members to parliament, that is, two knights of the shire, and for Colchester, Malden, and Harwich, two each. The chief rivers are the Thames, the Stower, the Lea, the Stort, the Coln, the Chelmer, the Blackwater, the Crouch, and the Roding, which contain variety of fish. The air of this country is very healthful, except in the Hundreds, where the inhabitants are subject to agues of a very bad sort. Among these Rochford and Dengy hundreds are the worst; and yet in these places the soil is very rich, and answers the expectation of the husbandmen, by whom they are chiefly inhabited, for the owners of the lands seldom choose to live there. No county in England abounds more in provisions of all sorts, of which great quantities are sent to London, both by sea and land, particularly butter, cheese and calves. Out of the sea they have soals, plaices, flounders, maids, lobsters, and oysters, of which last those from Colchester are most famous, being sent in barrels all over the kingdom. The waters in the hundreds are very indifferent, and in some places near the sea brackish, but in

in other places they are very good. The chief manufacture is the woollen, which is carried on at Colchester, Halstead, Braintree, and other places. The inhabitants make baize, says, serges, shalloons, &c. In some places they spin a great quantity of yarn, which is sent up to Spitalfields in London. Colchester and Bocking baize are in great esteem.

ESSOIN, in law, an excuse for a person summoned to appear and answer to an action on account of sickness, or other just cause of his absence.

ESSOIN-DAY is regularly the first day of every term, though the fourth day after is also allowed by way of indulgence.

ESTABLISHMENT of Dower, in law, an assurance of dower made to the wife by the husband, or some friend of his, on marriage.

ESTATE, in law, the title or interest that a person has in lands, tenements, or other effects; comprehending the whole in which a person hath any property, and will pass the same.

ESTATES, in a political sense, the dominions of some prince, or the general classes into which the people are divided.

ESTHER, a canonical book of the Old Testament, containing the history of a Jewish virgin, dwelling with her uncle Mordecai at Shushan, in the reign of Ahasuerus, one of the kings of Persia.

ESTRAY, in law, any beast, not wild, that is found within a lordship, and owned by no-body: in which case, being cried according to law in the two next market towns adjacent, and not claimed in a year and a day by the owner, it becomes the property of the lord of the manor or liberty wherein it was found.

ESTREAT, in law, a true copy, note, or duplicate of an original writing or record, especially fines, amercements, penalties, &c. set down and imposed in the rolls of a court, to be levied by the bailiff, or other officer.

ESTREPEMENT, in law, any spoil made by tenants for life on any lands, &c. to the prejudice of the reversioner: it is also taken to signify the making land barren, by continual ploughing and sowing, and thereby drawing out the heart of the ground without manuring, or other good husbandry, by which means it is impaired.

It may likewise be applied to the cutting down of trees, or lopping them farther than the law allows.

ETCHING, a method of engraving on copper, in which the lines or strokes instead of being cut with a tool or graver, are eaten in with aquafortis.

The method of working with aquafortis has been so far improved, that instead of being now deemed a spurious kind of engraving, it evidently appears the foundation of an excellence in many modern works, that could never have been produced without it: since, though the neatness and uniformity of the hatches, which attend the use of the tool, is more advantageous with respect to portraits; yet the liberty and facility of the other manner give a much greater opportunity to exercise the force of genius and fancy in history painting; where the effect of the whole, and not the minute exactness in finishing all the parts, constitutes the principal value. There are two methods practised of engraving in this way; the one with a hard varnish or ground; the other with a soft. The first was formerly much used, being better accommodated to the intention of imitating the engraving with the tool; as the firmness of the body of the varnish give more opportunity of retouching the lines, or enlarging them with the oval pointed needles, called by the French *échoppes*, as was practised by Le Boffe and others for that purpose. The latter has now almost wholly superseded the use of the other by the free and supple manner of working it admits of; which gives a power of expression incompatible with the greater inflexibility of the hard varnish, that confines the lines and hatches to such a regularity, and sameness, as give a stiffness of manner and coldness of effect to the work.

The mixture of the use of the tool and aquafortis, which are now both employed together in many cases, has however given that perfection to engraving which it bears at present. The truth and spirit of the outline that the method of working with aquafortis affords, and the variety of shades which the different kinds of black producible in this way, as well as other means of expressing the peculiar appearance and character of particular subjects, furnish what was defective in the sole use of the tool; while, on the other hand, the exactness and regularity of the lines, which are required for finishing many kinds of designs, are supplied by the graver: and by a judicious application of both, that complete finishing is obtained, which either of them alone must necessarily want.

The manner by which this art is performed, is the covering the surface of the plate with a proper varnish, or ground, as it is called, which is capable of resisting aquafortis; and then scoring or scratching away, by instruments resembling needles, the parts of this varnish or ground, in the places where the strokes or hatches of the engraving are intended to be: when, the plate being covered with aquafortis, the parts that are laid naked and exposed by removing the ground or varnish, are corroded or eaten away by it, while the rest, being secured and defended, remain untouched.

There are two methods of etching, as hath been already observed, the difference of which from each other consists, as well in the difference of the varnish or ground, as in that of the aquafortis, adapted to each kind: but the general methods of performing them is alike in both. These varnishes, or grounds, are distinguished by the names of hard and soft: for, in their consistence, or the resistance they give to the needles, lies their essential variation from each other. The hard varnish, it is with good reason conjectured, was not the first in use: but soon took place of the other; and was, for some time, the most received in practice, on the account of its admitting the work to be made more like that of the graver: the soft has however since, in its turn, prevailed to the exclusion of it in some degree, except in the case of particular subjects; but not so entirely as to take away the expedience of shewing how it is performed. The manner of etching with the soft varnish is now, however, one of the most important objects of the art of engraving, and it is at present in universal use, sometimes alone, but more frequently intermixed with the work of the tool, and, in some cases, with great advantage, even where the whole is intended to pass for being performed by the graver.

ETERNITY, an attribute of God, expressing his infinite or endless duration. See *God*.

ETHICS, or **MORALITY**, the science of manners or duty, which it traced from man's nature and condition, and shews to terminate in his happiness; or, in other words, it is the knowledge of our duty and felicity, or the art of being virtuous and happy.

ETHMOIDAL, in anatomy, is applied to one of the common sutures of the skull, which goes round the os ethmoides,

which separates it from the bones in contact with it.

ETHMOIDES is an epithet applied to a bone at the root of the nose, called also os ethmoides.

ETYMOLOGY, that part of grammar which explains the derivation of words, in order to arrive at their first and primary signification.

A judicious enquiry into etymologies is of considerable use. To discover the true and original ideas affixed to each word, and expression, must yield a very sensible pleasure to every man of taste. Besides, etymologies are necessary for the thorough understanding of a language; for the force of a word is generally better conceived when a person knows its origin.

An etymologist however has need of all the light he can come at to bring down words variously disguised in their passage, and remark all the changes that have befallen them: and as those alterations have sometimes been owing to caprice, it is easy to take a mere conjecture for a regular analogy; so that it is no wonder the public should be prejudiced against a science which seems to stand on so precarious a footing.

EVACUANTS, in medicine, are properly such things as diminish the animal fluids by throwing out some morbid or redundant humour; or such as thin, attenuate, and promote the motion and circulation thereof.

EVACUATION, in physic, the art of diminishing, emptying, or attenuating the humours of the body.

EVANGELISTS, at present, is confined to the writers of the four gospels, St. Matthew, St. Mark, St. Luke, and St. John.

EVAPORATION, in philosophy, the act by which the moisture in any body is exhaled or evaporated, either by the heat of the sun, or by means of fire.

EVAPORATION, in chemistry, that operation whereby the more aqueous and volatile parts of fluids are evaporated or drove away in vapours, in order to render the remaining part of a higher consistence than before.

EVASION, among lawyers, a cunning or subtle endeavouring to set aside, or escape the punishment of, the law.

EUBAGES, an order of priests, or philosophers among the ancient Celtæ, or Gauls.

EUCCHARIST, the sacrament of the Lord's supper. In the beginning of Chris-

tianity they administered the eucharist every day; afterwards four times a week: but as the power of religion declined, it fell to thrice a year, as Christmas, Easter, and Whitsuntide.

* **EUCLID**, a celebrated mathematician, born at Alexandria, taught in that city about two hundred and seventy-seven years before the Christian æra, under the reign of Ptolemy Lagus. He reduced all the fundamental principles of pure mathematics, which had been delivered down by Thales, Pythagoras, Eudoxus, and other mathematicians before him into regularity, and order, and added many others of his own discovering; on which account he is said to be the first who reduced arithmetic and geometry into the form of a science. He likewise applied himself to the study of mixed mathematics, and especially to astronomy, in which he also excelled. A fine edition of all his works was printed in 1703, by David Gregory, Savilian professor of astronomy, at Oxford.

EVE, the same with vigil. See *Vigil*.

EVER-GREEN, in gardening, a species of perennials which continue their verdure, leaves, &c. all the year, such are hollies, phillyria's, laurustinus's, bays, pines, firs, cedars of Lebanon, &c.

EVERLASTING-FLOWER, in botany, a name given to the amaranthoides.

EVERLASTING-PEA, a genus of plants, otherwise called lathyrus.

EVESDROPPERS, in law, persons who stand under the eves, walls, or windows of a house, to listen after news, and carry it to others, thereby raising strife and contention in the neighbourhood. They are punishable in the court-leet, or quarter-sessions.

EUGENIA, the silver-tree, in botany.

EVICTION, in law, signifies a recovery of lands, or tenements by law.

EVIDENCE, in law, the testimony a person gives in a court upon any fact of which he has a personal knowledge.

EVIL, *Malum*, in philosophy, &c. is either moral or natural.

Moral evil is the disagreement between the actions of a moral agent, and the rule of those actions, whatever it be.

Moral good and evil coincide with right and wrong, since that cannot be good which is wrong, or that evil which is right.

Natural EVIL, whatever destroys, or any way disturbs the perfection of natural beings: such are blindness, diseases, death, &c.

King's EVIL, in medicine, the same with the scrophula.

EVOLUTE, EVOLUTA, in the higher geometry, a curve first proposed by Mr. Huygens, and since much studied by the later mathematicians.

EVOLUTION, in arithmetic and algebra, implies the extraction of the roots of powers. See *Extraction*.

EVOLUTION, in the art of war, the motion made by a body of troops, when they are obliged to change their form and disposition, in order to preserve a post, occupy another, to attack an enemy with more advantage, or to be in a condition of defending themselves the better.

Naval EVOLUTIONS, the divers movements performed by fleets or squadrons at sea, in ranging or forming into such lines or positions as may be thought most proper or expedient.

Those who have any knowledge of the marine will undoubtedly allow, that the art of naval evolution is absolutely necessary; since this art consists only in regulating the several movements of a naval armament, as different situations, and occasions may require.

EUONYMUS, the spindle-tree, in botany.

EUPATORIUM, hemp-agrimony, in botany.

EUPHONY, in grammar, a figure, whereby we suppress a letter that is too harsh, and convert it into a smoother, contrary to the ordinary rules: of this there are abundance of examples in all languages.

EUPHORBIIUM, a gummy resinous concrete juice, exuding from an oriental, prickly, lactescent shrub of the same name.

There are many different species of the Euphorbium plant, natives of Africa, and preserved in Europe in the hot-houses of the curious. Whether the officinal gummy resin of that name is extracted from one particular species, or from several promiscuously, is uncertain.

The juice is extracted by wounding the stem in different parts, pieces of sheep-skin being previously tied round near the bottom, to prevent its running down upon the ground: the incisions are made with a long handled instrument, that the operator may receive no injury from the caustic liquor spurting upon the face, &c. The juice concretes into roundish, semi-transparent whitish tears, which for the most part are internally hollow: these are the euphorbium brought to us. We commonly find bits of the stalk, prickles, and seeds

seeds of the plant intermixed, and not unfrequently small stones and sand. The whitish or pale yellowish tears are preferred, as being the freshest; the browner or darker-coloured they appear, the longer they have been kept.

Euphorbium is in taste extremely acrimonious: the slightest touch burns and corrodes the tongue: received in small quantity into the nose, it occasions violent sneezing: the utmost caution is requisite in pulverizing it, to guard the eyes, nose, and mouth, from the pernicious effects of the fine dust that flies off.

The extreme acrimony of this drug renders it absolutely unfit for any internal use: several correctors have indeed been proposed for abating its virulence, but the best of them are not to be trusted to. It is employed only, and that but seldom, for external purposes; in stimulating unguents and plasters for paralytic limbs, carious bones, and beginning scirrhus tumours. Some have ventured on a minute portion of it, mixed with other powders, as an errhine, in obstructions of the nostrils, and mucous disorders of the head; a practice by no means advisable, as we are in no want of medicines for these purposes, equally effectual, and far more safe.

EUPHRASIA, eye-bright, in botany. This plant is an ophthalmic and cephalic, and good for a weak memory.

* **EUPHRATES**, the most celebrated river of Asia, has two sources to the northward of the city of Erzerum, in Turcomania, in about forty degrees of latitude. These streams unite three days journey below the city, where the river is navigable for small vessels, but the rocky channel renders the passage dangerous. It runs at first from east to west, thro' Turcomania, where meeting with Mount Taurus, it turns to the southward, dividing Turcomania from Natolia, and continuing its course south-east, divides Syria from Diarbeck or Assyria. It afterwards passes through the province of Irack Arabi, or Chaldea, and having united its waters with the Tigris, runs on south-east to the city of Basra, and falls into the gulph of Persia.

* **EUROPE**, one of the four parts of the world, is a large peninsula, being bounded on the north by the Frozen Ocean, on the west by the Western Ocean, on the south by the Mediterranean, which separates it from Africa, and by the Archipelago, which divides it in part from Asia, as also by the Black Sea, and then by the river Don, till it comes near the river

Volga or Wolga, and then it is parted from Asia by this last, and afterwards by the river Oby. Europe is situated between Long. 9. 35. W. and 72. 25. E. and Lat. 35. and 72. N. It is about three thousand three hundred miles in length, from Cape St. Vincent, in Portugal, to the river Oby, in Russia; and two thousand two hundred miles in breadth, from Cape Matapan, in the Morea, to the North Cape of Norway. We may judge by this, that it is much less than Asia and Africa; but it is in many things more considerable than both. Europe, excepting a small part of Lapland and Muscovy, is situated in the temperate zone. We cannot boast of rich mines of gold, silver, and precious stones, nor does it produce sugar or spices, nor yet elephants, camels, lions, tygers, panthers, and crocodiles, things that we can do without; but produces abundance of corn, pulse, fruits, animals, and even simples, the most necessary for the use of mankind. In general, it is better peopled and better cultivated than the other parts; it is fuller of cities, towns, and villages, and its buildings are more solid, and more commodious, in general, than those of Africa and Asia. The inhabitants are all white, and incomparably more handsome than the Africans, and even than most of the Asiatics. The Europeans surpass both in arts and sciences, especially in those called the liberal, in trade, navigation, and in military and civil affairs; being, at the same time, more prudent, more valiant, more generous, more polite, and more sociable than they; and though we are divided into various sects, yet, as Christians, we have infinitely the advantage over the rest of mankind. There are but few places in Europe where they sell each other for slaves; and none where robbery is a profession, as it is in Asia and Africa.

There are several sorts of governments in Europe, as the two empires of Germany and Russia, the kingdoms of England, France, Spain, Portugal, Denmark, Sweden, Poland, Prussia, Sardinia, and the Two Sicilies. The commonwealths are Holland, Switzerland, Venice, Genoa, Ragusa, Lucca, and Geneva. The dukedoms, Tuscany, Savoy, Modena, Mantua, Parma, and Courland, &c.

There are five sorts of religions in Europe, viz. The Mahometan, which is professed in Turkey in Europe; the Greek, of which there are many in the same parts, in all Muscovy, and in several

E X A

parts of Polish Russia; the Roman catholic in Spain, Portugal, France, and Italy; the protestant, though with a considerable difference, in Great Britain, Denmark, Sweden, and Norway. There is a mixture of both the last, in Ireland, Switzerland, Germany, Poland, Hungary, and the Low Countries: besides many Jews, and some idolaters, in Lapland, and the northern parts of Muscovy.

There are three general languages in Europe; the Latin, of which the Italian, the French, and the Spanish are dialects; the Teutonic, which is spoken, though differently in Germany, Hungary, Denmark, Sweden, and Great Britain; the Slavonic, which is spoken, though greatly disguised, in Muscovy, Poland, Bohemia, and Turkey in Europe. There are some of less extent, as the Greek, the proper Hungarian, the Basque, the British, which is spoken in Wales, and Bretagne in France, the Irish and the Laponic. Europe is as well watered with rivers as any part of Asia, or Africa. In Spain there is the Ebro, the Guadalquivir, the Guadiana, the Tajo, and the Douro; in France, the Garonne, the Rhone, the Loire, and the Seine; in Italy, the Po and the Tiber; in Germany, the Rhine, the Weser, the Elbe, the Oder, and the Danube; in England, the Thames; in Scotland, the Tay; in Ireland, the Shannon; in Poland, the Vistula and the Niaper; in Muscovy, the Don, the Dwina, the Wolga, and part of the Oby. The greatest cities in Europe are London, Paris, Amsterdam, Constantinople, Moscow, and Rome.

* EURYDICE, the wife of Orpheus, was bit by a serpent, and died on the very day of their marriage. Orpheus went to Tartarus, or hell, to seek for her; where, by the charms of his lyre and the sweetness of his voice, he obtained Pluto's permission to bring her back to the earth, on condition, that he did not look at her till they came to the light of the world: but his impatient fondness rendering him unable to avoid turning his head, to see if she was safe, she was snatched from him for ever.

EWE, the name of a female sheep. See *Sheep*.

EWRY, an office in the king's household, which has the care of the table linen, of laying the cloth, and serving up water, in silver ewers, after dinner.

EXACERBATION. See *Paroxysm*.

EXACTION, in law, a wrong done by an officer, or person, in pretend-

E X C

ed authority, in taking a reward or fee that is not allowed by law.

EXAGGERATION, in rhetoric, a kind of hyperbole, whereby things are augmented or amplified, by saying more than the truth, either as to good or bad.

EXALTATION, in astrology, a dignity which a planet acquires in certain signs or parts of the zodiac, which dignity is supposed to give it an extraordinary efficacy and influence.

EXAMINATION, in sea-affairs, a sort of naval catechism, composed of various questions put by a committee of veteran sea-captains to the midshipmen, to discover whether they are sufficiently qualified in the knowledge of their profession to become lieutenants.

EXAMINERS, in chancery, two officers of that court, who examine, upon oath, witnesses produced in causes depending there, by either the complainant or defendant, where the witnesses live in London, or near it. Sometimes parties themselves, by particular order, are examined.

EXANTHEMA, in medicine, is a pustule or eruption on the skin, as the measles, small-pox, &c. and is generally attended with a fever, and terminates in a rash.

EXCELLENCY, a title anciently given to kings and emperors, but now to ambassadors, governors, and other persons, who are not qualified for that of highness, and yet are to be elevated above the other inferior dignities.

EXCENTRIC, or ECCENTRIC, in geometry, are circles that have not the same center. The orbit of the sun is excentric with regard to the terrestrial globe; that is, it does not revolve round the same center.

Instead of the excentric circles in the Ptolemaic system, the moderns have supposed oval or elliptic ones, in order to explain the apparent irregularity of the planets, and their different distances with regard to the earth.

EXCENTRIC *Place of a Planet* is the true point of the orbit upon which the circle of inclination coming from the place of a planet in its orbit, falls at right-angles. Mars is very excentric with regard to the sun.

EXCENTRICITY, or ECCENTRICITY, in the Ptolemaic astronomy, is that circle which the sun is supposed to move in about our earth, and which has not the earth exactly for its center. And this the ancients found must be supposed, because

E X C

because the sun sometimes appears large, and then it is nearest to us; and sometimes smaller, and then it is farther off.

EXCENTRICITY of the Earth, in the new astronomy, is the distance between the focus and the center of the earth's elliptic orbit.

Mr. Whiston, in his *Prælect. Astron.* page 90, shews the method of finding this from the apparent motion of the sun, compared with the two extremities of the apsidæ: for since the true velocity of the earth in her aphelion and perihelion is in a reciprocal ratio of her distances from the sun; and that the apparent and angular velocity is in a duplicate ratio of her distances reciprocally; from the apparent difference of these two velocities, the difference of the distances, or the double excentricity, will easily be known. The excentricity of the whole distance is, at a mean, about a sixtieth part, or more accurately .01786.

EXCEPTION, in law, a stop or stay to an action, and is either dilatory or peremptory, in proceedings at common law; but in chancery it is what the plaintiff alleges against the sufficiency of an answer, &c.

EXCEPTION to Evidence, is where a demurrer is offered in any civil cause, for the insufficiency of the evidence given, and the court does not agree to it; in such case, the court, upon request, is to seal a bill of exceptions to the evidence, which may be heard on a writ of error.

EXCEPTIONS in Deeds and Writings, the saving a particular thing out of a general one granted by deed; as a room, shop, or cellar, out of a house; a field, or timber trees, out of land, &c.

EXCESS, in arithmetic and geometry, the difference between any two unequal numbers or quantities, or that which is left after the lesser is taken from or out of the greater.

EXCHANGE, in a general sense, a contract or agreement whereby one thing is given for another.

EXCHANGE, in commerce, the trade of money carried on between one place and another, by means of bills of exchange.

The things necessary to be considered in exchange are; 1. The real monies of each country or trading town. 2. Their imaginary monies. 3. The par of exchange.

1. By real money is meant a certain quantity of metal coined by the authority

E X C

of a state and current at a certain value, by virtue of that authority.

2. By imaginary money we are to understand all denominations used to express such sums as have no real species, or coin, of the value of any of these denominations.

1. The real monies of England.

	Gold coin.	£	s.	d.
A guinea, valued at	- - -	1	1	0
A half guinea	- - -	0	10	6
A quarter guinea	- - -	0	5	3
	Silver coins.			
A crown, valued at	- - -	0	5	0
A half crown	- - -	0	2	6
A shilling	- - -	0	1	0
A sixpence	- - -	0	0	6

Copper coins.

The half-penny, and the farthing, four of which make a penny.

Imaginary monies.

The pound, equal to twenty shillings.

The mark, equal to thirteen shillings and four pence.

The angel, equal to ten shillings.

The noble, equal to six shillings and eight pence.

The penny, equal to four farthings.

2. The real monies of Holland.

	Gold coins.	Florins.
A ducat, or ducatoon, valued at	- - -	20
A sovereign	- - -	15
A rose noble	- - -	11
	Silver and copper coins.	Stivers.
A ducatoon, valued at	- - -	63
A drix gulden	- - -	60
A rix-dollar	- - -	50
A crown	- - -	40
A dollar	- - -	30
A guld florin	- - -	28
A schilling or shilling	- - -	06
A stiver	- - -	01

Imaginary monies.

The guilder, or florin, of twenty stivers, or 240 groots.

The pound Flemish, of twenty shillings, or six guilders.

The groot, or penny Flemish, of half a stiver, or eight pfennicks.

The pfennick, or pfenning, or denier, 1-16th of a stiver.

At Amsterdam, Rotterdam, Middleburg, &c. they keep their accounts either in guilders, stivers, and pfennicks, or pounds, shillings and pence Flemish; which are divided as ours, viz. their pound into twenty shillings, and their shillings into twelve pence.

Their exchange with London upon the pound sterling, giving for it, when at par,

To guilders; or which is the same thing, thirty-three shillings and four pence Flemish.

The course of exchange runs between thirty and thirty-eight shillings Flemish per pound sterling.

In Hamburgh and Antwerp too, they keep their accounts and exchange with London, in the same manner as with Holland.

London exchanges also with Denmark, Norway, Sweden, Muscovy, Germany, Switzerland, Savoy, &c. but it is commonly done by the way of Hamburgh, Amsterdam, or Antwerp.

3. The real monies of France.

Gold coins.	Livres
Double louis d'or - - - - -	22
Louis d'or - - - - -	11
Half louis d'or - - - - -	5½

Silver coins.	
Ecu or crown - - - - -	3½
Half ecu - - - - -	1½

They have also 1-5th ecu and 1-10th ecu.

Brass coins.

The only brass coin is the fol, twenty of which make a livre.

Copper coins.

The liard or farthing, four of which make a fol.

The denier, twelve of which make a fol.

The double, which was coined for a double denier, but passes now for a liard.

Imaginary monies.

The pistole equal to ten livres.

The livre equal to twenty fols, or one third of an ecu.

At Paris, Lyons, Rouen, &c. they keep their accounts in livres, fols, and deniers; and exchange upon the ecu, or crown; the par of which, in sterling money, is four shillings and sixpence.

But it is to be observed, that the kings of France often raise the specie of the kingdom to rates considerably higher than those for which they were at first coined, and consequently far above their intrinsic value: so that a crown in specie will pass at four, five, or six livres. And three such livres are still named an ecu, or crown, though of a far less value than the ecu blanc, or white crown, that is a crown in specie. Hence it happens that the exchange is very variable, and falls low in proportion to the rising of the French money above the intrinsic worth of the species.

The course runs between twenty-five and forty pence sterling per crown, or be-

tween twenty and thirty livres per pound sterling.

N. B. The French add the term *tournois* to their money, to distinguish it from the money of other nations, in the same manner as the English add the word *sterling* to theirs.

The money of Spain is of two sorts, viz. of plate and of bullion; the plate-money is of good silver, never changes its price, and is reckoned more than twenty per cent. better than the money of bullion, which is a mixture of silver and brass, and as often varying in its price. In many places they buy and sell in rials of bullion; but when they state the accounts in their books, they commonly reduce them, by an allowance of so much per cent. to rials of plate.

4. The real and imaginary monies of Spain.

Gold coins.	Mervadies
A pistole, valued at four pesos or pieces of eight, or at -	1088
An half pistole, or two pesos, or	544

Silver coins.	
A peso, or piece of eight, at -	272
A rial, at - - - - -	34

A mervadie is a small piece of brass or copper, five of which and about 1-27th, are, in value, equal to an English penny.

The imaginary ducat, in exchange, is valued at 375 mervadies, but in buying and selling it is only accounted 374.

In Madrid, Seville, &c. they keep their accounts in rials and mervadies, and exchange upon the piece of eight, the par of which, with London, is four shillings and sixpence; but the course of exchange runs between fifty-two pence and seventy-two pence sterling.

5. The real monies of Portugal.

	Rees
Broad ducat of gold, valued at	1000
Double pistole - - - - -	4000
Pistole - - - - -	2000
Half pistole, or mill-ree - - -	1000
Stamped petacoon - - - - -	600
Current petacoon - - - - -	500
Stamped crusade - - - - -	500
Current crusade - - - - -	400
Stamped pifo - - - - -	480
Teston - - - - -	100

There are also the fractions of a teston, at 80, 60, 40, 20, and ten rees, which are of a mixed metal, composed of silver and brass.

There are several other species in Portugal; such as the *moidore*, a gold coin, valued at twenty-seven shillings sterling; the *John*, or *Joannes*, which is also gold, worth

worth thirty-six shillings; the half Joannes and quarter Joannes; as also the double Joannes, valued at three pound twelve sterling, &c.

In Lisbon, Oporto, &c. they keep their accounts in rees, and exchange in the half pistole, or mill-ree; the par of which is about six shillings and eight-pence half penny sterling; but the course of exchange runs commonly betwixt fifty and eighty-pence sterling per mil-ree.

6. The species or coins of Italy are very numerous, and would require more room than can be spared in this place: passing, therefore, the real monies, we shall endeavour to shew the manner of exchange between London and Genoa, Leghorn, Milan, Venice, and Rome.

At Genoa, they keep their accounts in liras, soldi, and deniers; reckoning twelve deniers to a soldi, and twenty soldi to a lire; and exchange upon the peyzo, of five liras, whose par is about four shillings and six-pence sterling: and the course of exchange is from forty-six to seventy-six and seventy-eight pence per peyzo.

At Milan they keep their accounts in the same manner, but exchange upon the ducat of five liras, fifteen soldi. The course of exchange runs from fifty-five to sixty-seven pence sterling per ducat.

At Venice, merchants keep their accounts in liras, soldi, and pichioli; reckoning twelve pichioli to the soldi, and twenty soldi to the lire. But the bank reckons by ducats and grosses. The ducat consists of twenty-four grosses. They exchange upon the ducat; the par of which is four shillings and eight-pence halfpenny sterling, and the course is from fifty-two to sixty-nine pence sterling per ducat banco.

Rome exchanges with London upon the scudi, whose par is about five shillings and six-pence sterling, and the course is from fifty-five to sixty-five pence sterling per scudi.

7. In the plantations of America, they reckon their monies, and keep their accounts, the same way as they do in Britain. But their money is of far less value: for bills upon London from any of the Caribbee-Islands are usually charged with 25 per cent. in favour of London; that is, if St. Christopher's, Montserrat, Antigua, &c. should draw upon London 100 l. the merchants of London charge the drawer with 125 l. for the said 100, and for Jamaica, Virginia, Maryland,

Pensilvania, New-England, &c. the difference is commonly greater.

London exchanges also with Ireland; but the course of exchange varies according to the demand of money or bills; commonly between four and fifteen per cent. loss to Ireland, or in favour of London.

The end and design of exchange is, to avoid the risk, and save the expence of transferring money.

The consequence is, that bills of exchange represent money so effectually, that there is no difference between the one and the other.

EXCHANGE signifies also a place in most considerable trading cities, wherein the merchants, negociants, agents, bankers, brokers, interpreters, and other persons concerned in commerce, meet on certain days, and at certain times, in order to confer and treat together of matters relating to exchanges, assurances, freightments, and other mercantile negotiations both by sea and land.

These assemblies are held with so much exactness, that the absence of a merchant, &c. makes him suspected of drawing to a failure or bankruptcy, as not being able to stand the 'change.

EXCHANGERS are such as return money by bills of exchange.

EXCHEQUER, in the British jurisprudence, an ancient court of record, in which all causes concerning the revenues and rights of the crown are heard and determined, and where the crown revenues are received.

It took this name from the cloth that covered the table of the court, which was chequered.

Black Book of the EXCHEQUER, a book containing a description of the court of England in 1175, and its officers, with their ranks, wages, privileges, perquisites, &c. also the revenues of the crown, both in money and cattle.

EXCISE, a certain duty or impost, charged upon liquors, as beer, ale, cyder, perry, malt, &c. and several other commodities, within the kingdom of Great Britain, and town of Berwick upon Tweed.

The excise is one of the most considerable branches of the king's revenues. It is managed for the king by commissioners, who receive the whole product of the excise, and pay it into the exchequer. These commissioners are nine in number in England, and four in Scotland. The former have a salary of 1000 l. a year, the latter 500 l.

scot. They are obliged by oath to take no fee or reward, but from the king himself; and from them there lies an appeal to five other commissioners, called commissioners of appeals.

EXCLAMATION, in rhetoric, an elevation of the voice which expresses the vehemence of any passion, as surprise, joy, admiration, indignation, grief, fear, desire, &c. In English the interjections o! oh! plhaw! alas! &c. are generally used in exclamation, in Latin oh! heu! ah? vah! &c.

EXCOMMUNICATION, an ecclesiastical censure, whereby such persons as are guilty of any notorious offence are separated from the communion of the church, and deprived of all spiritual advantages.

EXCOMMUNICATO CAPIENDO, a writ issued from the chancery upon the bishop's certifying an excommunication.

EXCORIATION, in medicine and surgery, the galling or rubbing off of the cuticle, especially of the parts between the thighs and about the anus.

EXCORTICATION, the same with barking of trees.

EXCREMENT, whatever is discharged out of the body of animals, after digestion, or whatever is otherwise superfluous or noxious in them. Urine and the feces are the gross excrements that are discharged out of the bladder or belly. Physicians likewise call excrement the various humours that are secreted from the blood through the various strainers in the body, and which serve for several uses, such as the saliva, sweat, bile, the pancreatic juice, lymph, the semen, nails, hair, the horns and the hoofs of animals.

EXCRESCENCE, in surgery, any superfluous matter that grows preternaturally upon the human or any other body, as wens, warts, or any sort of swelling, particularly a fleshy tumour.

EXCRETION, in medicine, the act of separating excrements, or excrementious humours, from the aliments or blood.

EXCRETORY, in anatomy, a term applied to certain little ducts or vessels which make part of the structure of the glands, being the small tubes through which the humours separated into the glands are discharged out of them into some convenient receptacle or emunctory.

EXECRATION, *execratio*, in antiquity, a kind of punishment, consisting of direful curses and marks of infamy.

EXECUTION, in a general sense, the

act of accomplishing, finishing, or achieving any thing.

EXECUTION, in law, the completing or finishing some act, as of judgment, deed, &c. and it usually signifies the obtaining possession of any thing recovered by judgment of law.

Military EXECUTION, the pillaging of a country by the enemy's army.

EXECUTOR, in law, a person appointed by another's last will and testament to have the execution of the same after his decease, and the disposing of the testator's goods and effects according to the intent of the will.

The law accounts an executor one person with the party whose executor he is; having all the advantages of action, and being subject to the same actions as the deceased.

Hence, as an executor derives his power wholly from the will, he may release a debt, or do any thing as executor, before probate of the will, provided he afterwards proves it, however to maintain actions for debt, he must shew the testament proved. He may immediately take the goods, or give power to another to seize them for him.

A person capable of making an executor, either makes one, two, three, or more; and he may appoint that one shall be his executor for one year, and another for another. If he appoints executors only for a certain number of years, after they are elapsed, the ordinary may grant administration of the goods; as he may do, till the power of executors take place. It is also observable, that where there is no executor, there is properly no will: and where there is no will there can be no executors; but this only regards goods; for where lands in fee are devised, it is a good will, though no executor be named therein.

An executor may either accept or refuse the executorship; but after he has accepted the office, he shall not refuse the same, nor take it up after refusal. If any one of the several executors prove the will, it will serve for all; so that the rest may at any time after join with him and intermeddle with the estate. When any action is brought, it must be in the name of all the executors, notwithstanding some of them may not act; but in any action commenced against them, he only that administers is to be sued. The possession of one executor is held to be possession of them all; and most acts done by or to one, are deemed done by or to all of them.

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EXECUTORY, in law, is where an estate in fee, that is made by deed or fine, is to be executed afterwards by entry, livery, or writ. Leases for years, annuities, conditions, &c. are termed inheritances executory.

EXECUTORY DEVISE, is when the fee by devise is vested in any person, and is to be vested in another upon contingency. In all cases of executory devises, the estates descend until the contingencies happen.

EXEDRÆ, in antiquity, a general name for such buildings as were distinct from the main body of the churches, and yet within the limits of the church, taken in its largest sense.

EXEMPLIFICATION OF LETTERS PATENT, a transcript or duplicate of them, made from the inrollment thereof, and sealed with the great seal.

EXEMPTION, in law, a privilege to be free from some service or appearance.

EXERCISE is such an agitation of the body as produces salutary effects in the animal œconomy. Exercise, Dr. Cheyne observes, is indispensibly necessary to preserve the body in due plight; without exercise the juices will thicken, the nerves relax, the joints stiffen; and, on these disorders, chronical diseases and a crazy old age will ensue. The body may be considered as a system of tubes and glands admirably adapted throughout, as a proper engine for the soul to work with. Exercise ferments the humours, cast them into their proper channel, throws off redundancies, and helps nature in those secret distributions without which the body cannot subsist in its vigour, nor the soul act with cheerfulness. Had not exercise been absolutely necessary for our well-being, nature would not have given such an activity to the limbs of the body, and such a pliancy to every part, as necessarily produce those compressions, extensions, dilatations, and all other kinds of motions necessary for the preservation of such a system of tubes and glands. And, that we might not want inducements to such an exercise of the body, riches and honour, even food and raiment, are not to be come at, without the toil of the hands, and sweat of the brow.

He farther observes, that those organs of the body which are most used, always become the strongest. Thus the legs, feet, and thighs of chairmen, the arms and hands of watermen, the backs and shoulders of porters, grow thick and strong by

E X E

use. Of all the kinds of exercise there is none which conduces so much to the health, and is every way accommodated to the body, as that of riding, which is less laborious and expensive of spirits than any other. Dr. Sydenham is very lavish in its praises. Dr. Mead too recommends it in the conclusion of his *Monita & Præcepta*.

EXERCISE, in military affairs, the ranging a body of soldiers in form of battle, and making them perform the several motions and military evolutions with different management of their arms, in order to make them expert therein.

EXERCISES, are also what young gentlemen learn in the academies and riding-schools, such as fencing, dancing, riding the great horse, &c.

EXERGUE, among antiquarians, a little space round or without the figures of a medal, left for the inscription, cypher, device, date, &c.

* **EXETER**, the *Augusta* of the Romans, and the *Exancester* of the Saxons, afterwards abbreviated to *Excester*, or *Exeter*; so called from the river *Ex*, on which it stands. It is the capital city of Devonshire, it is walled round, and was the seat of the west Saxons. Here several Roman coins, and other antiquities have been dug up. Besides chapels, and five large meeting-houses, here are seventeen churches in the city and suburbs; among which is the cathedral of St. Peter. This is a mayor town and county of itself, which sends two members to parliament. It has a long bridge over the *Ex*. Here are four principal streets, one of which is called the High-street, all centering in the middle of the town. Here is great plenty of water, which is conveyed by pipes; and an old castle, called Rongament, where the assizes are kept. Formerly ships could load and unload at the water gate; but the navigation having been obstructed, sluices and gates have been since made by act of parliament; so that vessels of 150 tons can come up to the quay. There is a brisk trade in this city, particularly in serges. Here are twelve companies, and it is the see of a bishop, which Edward the confessor translated hither from Crediton. Topsham, six miles below the town, may be looked upon as the port of Exeter. It gives title of earl to a branch of the Cecil family. It lies twelve miles north of the English channel, and 172 west of London. The weekly markets here are on Wednesdays and Fridays. Its annual fairs are on Ash-wednesday,

E X I

nesday, Whitsun-monday, August 1st, and December 6th, for horned cattle, hories, and almost every commodity.

EXFOLIATION, in surgery, the scaling of a bone, or its separating into laminae or leaves.

EX GRAVI QUERELA, in law, a writ that lies for the person to whom any lands or tenements in fee are devised by will, and the heir of the divisor enters thereon, and detains them from the devisee.

EXHALATION, in philosophy, is applied to those dry corpuscles, as also to the pinguious, oleaginous, sulphureous particles or effluvia, that are separated from hard, earthly, fatty bodies, particularly the earth itself, either by the heat of the sun, the agitation of the air, or some other causes; and being emitted upwards, to a certain height in the atmosphere, there mix with the vapours, which properly are those moist fumes that are raised from water and other liquid bodies, and help to form clouds, which return back in dew, mist, rain, snow, hail, &c.

The nitrous and sulphureous exhalations are the chief matter of which thunder, lightning, dew, and other meteors are generated in the air.

EXHIBIT, in law, is where a deed, or other writing, being produced in a chancery suit, to be proved by witnesses, the examiner, or commissioner appointed after the examination of any such, certifies on the back of the deed, or writing, that the same was shewn to the witness, at the time of his examination, and by him sworn to.

EXHIBITION, a benefaction settled for the benefit of scholars in the universities, that are not on the foundation.

EXHIBITION, was anciently an allowance for meat and drink, such as the religious proprietors made to the poor depending vicar.

EXHORTATION, in rhetoric, differs only from persuasion, as being more directly addressed to the passions.

EXIGENT, in law, a writ which lies where the defendant in a personal action cannot be found, nor any effects of his within the county, by which he may be attached or distrained.

EXIGENTERS, four officers in the court of Common-Pleas, who make all exigents and proclamations in all actions where process of outlawry lies.

EXISTENCE, that whereby a thing has an actual essence, or it is said to exist, or be. It has been a subject of great dis-

E X O

pute, whether eternal bodies have any existence but in the mind; that is, whether they really exist, or exist in idea only. The former opinion is supported by Mr. Locke, and the latter by Dr. Berkeley.

Those who desire to see the arguments brought by those learned authors, we refer to Locke's Essay on Human Understanding, and Berkeley's Princip. of Human Knowledge.

EXIT, in a theatrical sense, the action of a player in going off the stage, after he has played his part.

EXODUS, a canonical book of the Old Testament, being the second of the Pentateuch. It is so called from the Greek, going out, or departure of the children of Israel from the land of Egypt.

EX OFFICIO, among lawyers, signifies the power a person has, by virtue of his office, to do certain acts.

EXOMPHALUS, in surgery, a hernia, or kind of rupture, that exhibits a preternatural tumor or protuberance at the navel.

EXORCISM, a ceremony consisting of prayers and conjurations to drive the devil out of persons possessed, or for the removal of any danger or diseases from man or beast, and to destroy vermin and noxious animals. The use of exorcism is almost as ancient as the church: it makes a considerable part of the superstition of the Romish church, for which she hath appointed many ridiculous ceremonies in her ritual. The Romanists not only exorcise demoniacs, but likewise houses and other places which are haunted, as it is called; and this is done in the same manner as the exorcism of persons.

The ancient heathens practised exorcisms, and the modern of the East and West Indies have also several ceremonies among them for casting out devils and hobgoblins.

EXORDIUM, in rhetoric, is the introduction, preamble, or beginning of any discourse, serving to prepare the audience for what is to follow.

EXOSTOSIS, a preternatural excrescence of a bone, as often happens in venereal cases; or rather a protuberance caused by a bone's being out of its natural position.

EXOTIC, a term chiefly applied to plants which are foreign, particularly those brought from the East and West Indies: whence the use of hot-beds, green-houses, &c. in order to make them thrive.

Dr. Lister, in the Philosophical Transactions, gives an account of exotic diseases,

cases, as 1. The plague, which is properly a disease of Asia, where it is epidemic. 2. The small-pox, not known in Europe, or even in Asia Minor, or Africa, till a spice trade was opened to the remotest parts of the Indies, where it rages more cruelly than among us. 3. The griping of the guts, which he takes to be peculiar to the West-Indies, and yearly received from thence.

EXPANSION, the opening and stretching out of any body; but generally it signifies such an alteration as is made by rarefaction, and the quantity of this Dr. Halley gives in the Philosophical Transactions, No. 197. The law of the expansion of air is this, that the spaces into which air of a given quantity is compressed, are reciprocally proportionable to the compressing weights. Dr. Gregory proves in his astronomy, that a globe of air, of but one inch in diameter, if it had so great an expansion as it will have at a semi-diameter's distance of the earth from it, would fill all the planetary regions far beyond the sphere of Saturn.

EX PARTE, a term used in the court of chancery, where a commission is executed by one side or party only, upon the other party's neglecting or refusing to join therein. When both the parties proceed together; it is called a joint commission.

EXPECTANT, in law, signifies having relation to, or depending on: thus, where land is given to a man and his wife, and to their heirs, they have a fee simple estate; but if it be given to them and the heirs of their bodies begotten, they have an estate tail, and a fee expectant, which is opposed to fee simple.

EXPECTORANTS, *Expectorantia*, in medicine, are such things as promote a discharge of whatever is offensive to the lungs and aspera arteria.

EXPECTORATION, in medicine, the act of evacuating or bringing up phlegm, or other matter, from the lungs, by coughing, spitting, &c.

EXPENDITORS, the persons who disburse or expend the money collected by the tax for repairs of sewers, after the same is paid into their hands by the collectors, as ordered by the commissioners, and for which they are to render accounts when required.

EXPERIENCE, a kind of knowledge acquired by long use, without any teacher.

EXPERIMENT, in philosophy, the trial of the result or effect of the applications and motions of certain natural bodies,

in order to discover something of their motions and relations, whereby to ascertain some of their phenomena, or causes.

EXPERIMENTAL PHILOSOPHY, that philosophy which proceeds on experiments, which deduces the laws of nature, and the properties and powers of bodies, and their actions upon each other, from sensible experiments and observations. The business of experimental philosophy is to enquire into and to investigate the reasons and causes of the various appearances or phenomena of nature, and to make the truth or probability thereof obvious and evident to the senses, by plain, undeniable, and adequate experiments, representing the several parts of the grand machinery and agency of nature. In our enquiries into nature, we are to be conducted by those rules and maxims which are found to be genuine, and consonant to a just method of physical reasoning; and these rules of philosophizing are by the greatest master in science, Sir Isaac Newton, reckoned four, which are as follow:

1. More causes of natural things are not to be admitted, than are both true, and sufficient to explain the phenomena; for nature does nothing in vain, but is simple, and delights not in superfluous causes or things.

2. And, therefore, of natural effects of the same kind, the same causes are to be assigned, as far as it can be done; as of respiration in man and beasts, of the descent of stones in Europe and America, of light in a culinary fire and in the sun, and of the reflection of light in the earth and in the planets.

3. The qualities of natural bodies which cannot be increased or diminished, and agree to all bodies in which experiments can be made, are to be reckoned as the qualities of all bodies whatsoever: thus, because extension, divisibility, hardness, impenetrability, mobility, the vis inertiae, and gravity, are found in all bodies which fall under our cognizance or inspection, we may justly conclude they belong to all bodies whatsoever, and are therefore to be esteemed the original and universal properties of all natural bodies.

4. In experimental philosophy, propositions collected from the phenomena by induction, are to be deemed (notwithstanding contrary hypotheses) either exactly or very nearly true, till other phenomena occur, by which they may be rendered either more accurate, or liable to excep-

tion. This ought to be done, lest arguments of induction should be destroyed by hypotheses.

These four rules of philosophizing are premised by Sir Isaac Newton to his third book of the Principia; and more particularly explained by him in his Optics.

EXPERIMENTUM CRUCIS, a capital, leading, or decisive experiment.

EXPIATION, a religious act, by which satisfaction, atonement, or amends is made for the commission of some crime, the guilt done away, and the obligation to punishment cancelled.

Great day of EXPIATION, an annual solemnity of the Jews, upon the tenth day of the month Tisri, which answers to our September.

EXPIRATION, in physic, that part of respiration whereby the air is expelled or driven out of the lungs. See *Respiration*.

EXPIRATION is also used for the end of any term agreed upon. It likewise signifies death.

EXPLOSION, is properly applied to the going off of gunpowder, and the report made thereby: but it is frequently used to express such sudden actions of bodies as have some resemblance thereto; such as the sudden effervescence, ebullition, and expansion that arise from the mixture of some contrary liquors, as spirit of nitre and spirit of wine; oil of vitriol and oil of turpentine; oil of vitriol, and sal ammoniac, &c.

EXPONENT, in algebra, a number placed over any power, or involved quantity, to shew to what height the root is raised, in order to contract the work. Thus $x^4 = xxxx$. Hence 4 is the exponent of the power x , and shews that it is involved to the fourth power.

The word is derived from *expone*, to shew, or expound.

EXPONENT of a Ratio is the quotient arising from the division of the antecedent by the consequent.

Thus the ratio of 3 to 3 is $1 \frac{1}{2}$, and the ratio of 2 to 3 is $2-3$. If the consequent be unity, the antecedent itself is the exponent of the ratio: and, therefore, the exponent of a ratio is to unity, as the antecedent is to the consequent.

Though the quotient resulting from the division of the antecedent by the consequent, is generally taken for the exponent of a ratio; yet, in reality, the exponent of a ratio ought to be a logarithm. And this seems to be more agreeable to

Euclid's definition of duplicate and triplicate ratios, than quotients: for, 1, 3, and 9, are continual proportions; now, if 1-3 be the exponent of the ratio of 1 to 3, and 3-9, or 1-3, the exponent of the ratio of 3 to 9, and 1-9 the exponent of the ratio of 1 to 9; and since Euclid says, "If three quantities are proportional, the ratio of the first to the third is said to be the duplicate of the ratio of the first to the second, and of the second to the third;" therefore 1-9 must be the double of 1-3, which is very false. But the logarithm of the ratio of 1 to 9, that is, the logarithm of 9 is the double of the ratio of 1 to 3, or 3 to 9, that is, the logarithm of 3. From whence it appears, that logarithms are more properly the exponents of ratios, than numerical quotients; and of this opinion seem Dr. Hally, Mr. Cotes, and others.

EXPONENT, in arithmetic, is used in the same sense as index or logarithm.

EXPONENTIAL CALCULUS, the manner of finding the fluxions, and of summing up the fluxions of exponential quantities.

EXPONENTIAL CURVE, that whose nature is expressed by an exponential equation.

EXPONENTIAL EQUATION, that wherein there is an exponential quantity, $ax=y$.

EXPONENTIAL QUANTITY, a quantity whose power or exponent is a variable or flowing quantity.

Exponential quantities are of several powers or degrees, according as the exponents themselves are more or less involved.

EXPORTATION, the shipping and carrying out of the kingdom, commodities for other countries.

Exportation is part of foreign commerce, distinguished by the appellation active or selling part, in opposition to importation, which is called the passive, or buying part. Belloni observes, that commerce, when active, must produce a vast flow of riches, the balance being always received in money; whereas, if it be passive, the most immense treasures will soon be exhausted, as the balance of trade must be continually made good out of the remaining coin. See *Commerce*, *Money*, and *Exchange*.

EXPOSITOR, or **EXPOSITORY**, a title given to small dictionaries, serving to explain the hard words of a language.

EX POST FACTO, in law, something done after another: thus, an estate granted may be good by matter *ex post facto*,

E X P

facto, that was not so at first, as in case of election.

EXPOSTULATION, in rhetoric, a warm address to a person, who has done another an injury, representing the wrong in the strongest terms, and demanding redress.

EXPOSURE, or **EXPOSITION**, in gardening, is the aspect or situation of a garden, or wall, with respect to the sun or winds: they are, therefore, as various as the points of the compass; being either direct, as east, west, north, or south; or declining, as south-east, north-west, &c. The gardeners do not give those names to the places where the sun is, but to those whereon he shines.

The eastern and southern exposures are, by common consent of all gardeners, the two principal, and have a considerable advantage above the rest. The eastern, commencing differently at different seasons of the year, and ending about noon, subjects the trees, &c. to the north-east winds, which wither the leaves, blow down the fruit, &c. Yet Mr. Laurence judges the east better than the west wall for all kinds of fruit, because the early rays of the sun sooner take off the cold chilly dews of the night. The western, accounted half an hour after eleven till sun-set, is more backward than an eastern one by eight or ten days; but it has this advantage, that it receives little damage from the frosts, which melt before the sun comes to shine upon the fruit, and fall off like dew without doing any prejudice: but it is incommoded with the north-west winds in the spring, as also with the autumnal winds, which blow down a deal of fruit. The western exposure is better than the north, which is the worst of all.

EXPRESSED OILS, in chemistry, such as are obtained from bodies only by pressing.

EXPRESSION, in chemistry, or pharmacy, denotes the act of pressing out the juices, or oils of vegetables, which is one of the three ways of obtaining them; the other two are by infusion and decoction. Oils obtained by means of fire are called stillatitious.

EXPRESSION, in rhetoric, the elocution, diction, or choice of words necessary to render any discourse eloquent. As the principal end of speaking is to be understood, the first thing we should endeavour to obtain is a richness of expression, or habit of speaking so well, that our thoughts may be understood. In short,

E X P

beautiful expression is the natural and true light of our thoughts; it is to this we owe all those excellencies in discourse, which gives things a kind of vocal life and spirit.

EXPRESSION, in painting, the representation of an object according to its natural character, and the painter's invention or plan. In portraits it must be seen whether the person is grave, gay, a man of business or wit, plain, gentle, &c. each character must have an attitude, the ornaments, and back-ground proper to it; and all about it must be expressive of the man, and have a resemblance as well as the features of the face. If the person has any particularities as to the position of the head, eyes, or mouth, if not unbecoming, they must be strongly expressed. These are a sort of moving features, and are as much a part of the man as the fixed ones: some things raise a low subject, and contribute more to a surprising likeness than any thing else. If there be any thing particular in the history of the person which is proper to be expressed, it is a great improvement to the portrait, to them that know that circumstance. Robes, or other marks of dignity, or of a profession, employment, or amusement, a book, a ship, a favourite dog, or the like, are historical expressions common in portraits. There are several kinds of artificial expressions practised by painters, because of the disadvantage of their art in that particular, in comparison of words.

But there is no better school than nature for expression. A painter therefore should, on all occasions, observe how men look and act, when pleased, grieved, angry, &c.

Love is expressed by a clear, fair, and pleasant countenance, without clouds, wrinkles, or unpleasant bendings; giving the forehead an ample height and breadth, with a majestic grace; a full eye, with a fine shadow at the bottom of the eye-lid, and a little at the corner; a proportionable nose; nostrils not too wide; a clear cheek, made by shadowing it on one side, and a smiling mouth, made by a thin upper-lip, and shadowing the mouth-line at the corners.

Fear is expressed by making the eyes look hollow, heavy, and downwards, thin fallen cheeks, a close mouth, careless staring hair about the ears.

Envy is best expressed by only the hanging of the cheeks, and a pale countenance; and sometimes by grinding of the teeth.

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Let every passion be represented according to its outward appearance in those in whom it reigns.

If you aim at any excellence in this art, you must endeavour to choose out the best actions for every purpose, in restraining the luxurious fancy of nature by a deliberate discretion, by the benefit of which you will finish your design: always expressing in each member a certain hidden resemblance of the principal motions which affect the eye and soul of the spectator.

To express a passion truly, you ought to give every thing its proper motion, or that which best suits your intention; which is nothing else but the agreement of proportion with the action or passion intended, wherein consists the whole life of the art, for hereby an evident difference is made between the living and the dead; the fierce and the gentle; the wise and the simple; the sad and the merry; and in a word, discovers all the several passions and gestures which the body of a man is capable of.

But before these things can be exactly done in a picture, you must first intensely consider the life, that you may come as near it as possible; to which adding art, you will meet with no motions so potent, which you will not be able artificially to imitate.

These things will be the more exactly accomplished, by viewing and continually practising what you have seen; so as lively to express all gestures, actions, and passions, incident to natural bodies.

EXTASY, a transport which suspends the function of the senses, by the intense contemplation of some extraordinary or supernatural object, or when God impresses on the imagination the extraordinary ideas of any thing he would reveal.

EXTENSION, in philosophy, the quality or property of any thing extended that occupies space. The essence of body or quality consists in extension, of which there are three sorts, length, breadth, and depth.

EXTENSOR, an appellation given to several muscles, from their extending or stretching the parts to which they belong: such are, 1. The common extensor of the fingers. 2. The extensor of the thumb. 3. The proper extensors of each finger. 4. The long extensor of the toes. 5. The short extensor of the toes. Besides these, there are proper extensors of the toes; also the long and short extensors of the great toe, and the common extensor of the back and loins, which is divided into three. If

these act only on one side, they draw the parts obliquely sideways.

EXTENT, in law, sometimes signifies a writ or command to the sheriff for the valuing of lands or tenements; and sometimes the act of the sheriff, or other commissioner, upon this writ; but most commonly denotes an estimate or valuation of lands: and hence come our extended or rack-rents.

EXTERNAL Angles, the angles on the outside of any right lined figure, when all the sides are severally produced, and they are all, taken together, equal to four right angles.

EXTINGUISHMENT, in law, a consolidation or union, as where one has due to him a yearly rent out of lands, and afterwards purchases the lands out of which the rent arises: in this case, both the property and the rent being united in one possessor, the rent is said to be extinguished.

EXTORTION, in law, an illegal manner of wresting any thing from a man either by force, menace, or authority. Also the exaction of unlawful usury, winning by unlawful games, and taking more than is due under pretence of right.

EXTRA-JUDICIAL is when judgment is given in any cause that is not depending in that court where such judgment is given, or wherein the judge has no jurisdiction.

EXTRACT, in pharmacy, the purer part of vegetables, or other natural bodies, that has been separated from the more gross parts, and dissolved in some proper menstruum by means of digestion, and reduced to a thick and moist consistence, by distillation or evaporation of the menstruum.

EXTRACT, in matters of literature, is something copied or extracted from a book or paper.

EXTRACTION, in chemistry, the operation whereby essences, tinctures, &c. are extracted.

EXTRACTION, in surgery, the extracting any foreign matter out of the body, by instruments.

EXTRACTION of Roots, the method of finding the root of given numbers or quantities.

The square, cube, and other powers of a number, or root, are formed by multiplying the given number into itself a greater or less number of times, as the power required is either higher or lower.

This multiplication compounds the powers; and the extraction of the root de-compounds

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compounds them again, or reduces them to their first principles or roots.

Thus, 4 multiplied by 4, produces 16, which is the square of four; and 16 multiplied by four, makes 64, which is the cube of 4:—Such is the composition of powers.

Again, the square root of 16 is 4, by reason 4 is the quotient of 16 divided by 4; and the cube root of 64 is likewise 4, by reason 4 is the quotient of 64 divided by the square of 4:—Such is extraction of roots.

Hence to extract the root of a given power is the same thing as to find a number; E. gr. 4, which being multiplied a certain number of times into itself, produces the given power, e. gr. 16, or 64.

For the extraction of square and cube roots, it is necessary to have the squares and cubes of all the digits in readiness, as exhibited in the following table.

Roots	1	2	3	4	5	6	7	8	9
Sqrs.	1	4	9	16	25	36	49	64	81
Cubes	1	8	27	64	125	216	343	512	729

To extract the square root out of a given number.—1^o. Divide the given number into classes, of two figures a piece; and include each class between two dots, commencing with the place of units, or the right hand figure, the root will consist of so many parts or figures as you have classes.—By the way observe, it may happen that for the last class on the left hand there shall only be one figure left.

2^o. Then the left hand class being the square of the first figure of the root sought, look into the table of roots for the square roots answering to that number; or if that square number be not precisely there, to the next less number: this root write down for the first figure of the quotient, and subtract its square from the left hand class.—To the remainder bring down the next class towards the right.

3^o. Write down the double of the quotient figure under the left hand of the second class, and seek how often this decuple is contained in the figure over it; the quotient gives the second figure of the root.

4^o. Write the same quotient under the right hand figure of the same class, and subtract the product of the whole number underwritten, multiplied by the first figure of the root, from the number over it, as in division.

5^o. This operation being repeated according to the third and fourth steps, i. e.

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the remainder being still divided by the double of the root, as far as extracted; and from the remainder, the square of the figure that last came out, with the decuple of the aforesaid divisor augmented thereby, being subtracted; you will have the root required.

EXTRACTION of the Cube Root may be performed by the following method, which admits of two cases.

Having pointed the number to be extracted, generally called the resolvend, into classes of three figures a-piece, seek a cube number that comes the nearest to the first period of the resolvend.

Case 1. If the cube number so taken be less than the first period of the resolvend, call its root less than just, and subtract that cube from the first period of the resolvend.

Case 2. But if the cube be greater than the first period of the resolvend, call its root more than just, and subtract the resolvend from that cube, annexing cyphers to it.

To the first root, whether it be less or more than just, annex so many cyphers as there are remaining points over the whole number of the resolvend, and multiply it by 3; then make the product a divisor, by which you must divide the difference between the resolvend and the aforesaid cube, then will that quotient be the resolvend depressed to a square; and therefore it must be pointed as such, viz. into periods of two figures each. That being done, make the first root (without these cyphers that were annexed to it) a divisor, enquiring how often it may be found in the first period of the new resolvend (as before in extracting the square root) with this consideration, that if the root (now a divisor) be less than just, you must annex the quotient figure to it; and then multiply the root so increased into the said quotient figure setting down the units place of their product under the pointed figure of that period, and subtracting it as in division: and so on from one period to another as before. But if the said root, now a divisor, be more than just, then you must subtract the quotient figure from cyphers annexed, or supposed to be annexed to the said divisor, multiplying the root so reduced into the quotient figure, setting down their product as before, &c.

EXTRACTION of the square-root of compound algebraic quantities.

The extraction of the square-root of compound algebraic quantities is so very like

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like that of whole numbers in common arithmetic, especially in the case of series, where it is chiefly required, that a bare inspection of the work will be sufficient.

EXTRACTION of the cube root of algebraical quantities.—The method of extracting the cube root of algebraical quantities differ so little from that already delivered for extracting it numerically, that we presume it will be needless to give any examples; we shall therefore only add the following theorem to shew the reason of these operations.

Suppose it were required to find the value of $x^3 = G$. Put $r \times y = G$, supposing r less than the true root; involved $r \times y$ to the third power, and we shall have $r^3 + 3rry + 3rry + y^3 = x^3 = G$; and $3rry + 3rry + y^3 = G - r^3$; and

$ry + y^2 + \frac{y^3}{3r} = D$. Let $\frac{y^3}{3r}$ be rejected as of small value; then it will be $ry + y^2 = D$, which gives this theorem $\frac{D}{r+y} = y$.

By this theorem, the examples given in extracting the cube-root numerically are performed.

EXTRAVASATION, in medicine, is applied to the blood, or any sort of fluid, when got out of the vessels in which it ought to be contained.

EXTREMES, in logic, those terms in the conclusion of any syllogism that have a relation to some other term as a mean.

EXTRINSIC, among metaphysicians, sometimes signifies a thing not belonging to the essence of another; in which sense the efficient cause and end of a thing are said to be extrinsic. Sometimes it signifies a thing's not being contained within the capacity of another, in which sense those causes are called extrinsic, which introduce something into a subject from without, as where a fire introduces heat. Sometimes it implies a thing added or applied to another, in which sense accidents and adherents are said to be extrinsic to the subjects to which they adhere. Sometimes the vision is said to be extrinsic from some form which does not exist in that thing, but is adjacent to it, or by some means or other without it. See *Intrinsic*.

EXULCERATION, the same as ulcer; but generally applied to those erosions that begin to form an ulcer.

EXUVIÆ, among naturalists, the cast-off parts or coverings of animals, as the skins of serpents, caterpillars, and other insects.

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EXUVIÆ is also used for the remains of sea-animals found fossil, and more properly called extraneous, or marine fossils.

EYE, in anatomy, the organ of sight, or the instrument which represents objects to the mind. The whole body of the eye is a kind of telescope of infinite perfection, which transmits images in an exact and complete manner even to the bottom of it. This bottom is invested with textures of nerves, with which the image is imprinted, and by that means the sensation is produced, of which one of these textures is the immediate organ.

In order to give a clearer idea of the structure of the eye, and the mechanism of vision, let us have recourse to the camera obscura, or dark chamber, which the eye in some measure resembles.

Shut up a room so close as to deprive it entirely of light. Then make a hole in one of the window shutters; and opposite this hole, at the distance of several feet, place a cloth or some white paste-board, on which all the objects without will be painted in the most lively and natural colours, though absolutely reversed. If these images are desired to be represented in a more exact and more beautiful manner, let a lens be applied to the hole of the window-shutter, which, by collecting the rays, will form an image more compact and distinct. See *Camera Obscura*.

All that is wanting to render the camera obscura, with regard to simple objects, an artificial eye, is the figure of a globe, and having the lens placed within the globe.

In the natural eye the globe or case is formed by supple membranes, and the lens by transparent bodies, and humours equally transparent.

As the only way to have any distinct notion of the amazing curious structure of the eye, is to see it dissected, we shall not here waste time in describing it any further.

EYE, in architecture, is applied to any round window made in a pediment, an Attic, the reins of a vault, or the like.

EYE of a Dome, an aperture at the top of the dome, as that of the Pantheon at Rome, or of St. Paul's at London; it is commonly covered with a lantern.

EYE of the Volute, in architecture, the center of the volute, or that point in which the helix or spiral, of which it is formed, commences.

EYE, in agriculture and gardening a

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a little bud, or shoot, inserted into a tree by way of graft.

EYE-BROW, in anatomy. See *Supercilium*.

Bull's EYE, in astronomy, a star of the first magnitude in the constellation Taurus.

EYRE, in law, implies the itinerant courts of justice. The word is formed from the old French, *erre, iter*, way, path, or track.

EZEKIEL, the name of a canonical book of the Old Testament, referring chiefly to the degenerate manners and corruptions of the Jews of those times. It abounds with elegant sentences, and fine

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comparisons, and abundantly shews that the writer was no stranger to profane learning: Ezekiel was carried captive to Babylon with Jeconiah, and began his prophecy in the fifth year of the captivity. He was cotemporary with Jeremiah, who prophesied at the same time in Judea.

EZEKIEL's *Reed*, or *Rod*, a measure of length mentioned by that prophet, and supposed to be nearly equal to two English feet.

EZRA, a canonical book of the Old Testament, comprehending the history of the Jews, from the time of Cyrus's edict for their return, to the twentieth year of Artaxerxes Longimanus.

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F, The sixth letter, and fourth consonant of the alphabet. It is borrowed from the digamma or double gamma of the *Ælians*, as is evident from the inscription on the pedestal of the colossus at Delos; and was undoubtedly formed from the old Hebrew Vau: and though this letter is not found in the modern Greek alphabet, yet it was in the ancient one, from whence the Latins received it, and transmitted it to us.

It is formed by a strong expression of the breath, and joining at the same time the upper-teeth and under-lip. It has but one sort of sound, which has a great affinity with *v* and *ph*, the latter being written for it by us in all Greek words, as *philosophy*, &c.

F or FA, in music, the fourth note in rising in this order of the gamut, *ut, re, mi, fa*. It likewise denotes one of the Greek keys in music, destined for the bass.

F, in physical prescription, stand for *fiat*, or let it be done. Thus *f. s. a.* signifies *fiat secundum artem*.

FABA, the bean, in botany, is comprehended by Linnæus among the *viciæ*.

FABER, in ichthyology, a fish of the zeus kind, called in English doree, or john dory.

FABLE, a tale, or feigned narration, designed to instruct or divert, disguised under the allegory of an action, &c. Jotham's beautiful fable of the trees is the oldest that is extant. Nathan's fable of the poor man and his lamb is the next in

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antiquity, and had so good an effect as to convey instruction to the ear of a king. We find *Æsop* in the most distant ages of Greece; and, in the early days of the Roman commonwealth, we find a mutiny appeased by a fable of the belly and the members. As fables had their rise in the very infancy of learning, they never flourished more than when learning was at its greatest height: witness *Horace*, *Boileau*, and *Fontaine*. Fable is the finest way of giving counsel, and most universally pleasing, because least shocking; for in the reading of a fable, a man thinks he is directing himself, whilst he is following the dictates of another, and consequently is not sensible of that which is the most unpleasing circumstance in advice. Besides, the mind is never so much pleased as when she exerts herself in any action that gives her an idea of her own abilities; this natural pride of the soul is very much gratified in the reading of fables.

Some of the ancient critics reckon three kinds of fables; rational, called also parables; moral, called apologues; and mixed, composed of both sorts. Besides this kind there is another in which the actors are passions, virtues, vices, and such like imaginary persons, which in strictness may be called allegory.

FABLE is also used for the plot of an epic or dramatic poem; and according to Aristotle, it is the principal part and soul as it were of a poem. In this sense the fable is defined a discourse invented with

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art to inform the manners by instruction, disguised under the allegory of an action. The contrivance of each fable must have two parts; namely, the intrigue and discovery. Every fable must have these two parts to be the subject of a just poem. Besides, the fable must, to be perfect, be admirable and probable; the admirable is that part of it which is contrary to the ordinary course of nature, the probable is whatever suits with the common opinion. But the most part of those that compose poems, by too great a passion to create admiration, take not sufficient care to temper it with probability. Almost all the ancient poets, however judicious in other respects, have been guilty of this fault: not to speak of the moderns. Probability gives credit to whatever is most fabulous in poetry; it serves also to give a greater lustre and air of perfection than even truth itself; for truth represents things only as they are, but probability renders them as they ought to be.

FABRIC, the structure or construction of any thing, particularly a house, hall, church, &c.

FABULOUS, consisting of, or connected with, a fable.

FABULOUS Age, among ancient historians. See *Age*.

FACADE, in architecture. See *Face*.

FACE, in anatomy. See *Head*.

FACE, in architecture, the front of a building, or the side which contains the chief entrance. It is also sometimes used for the side which it presents to the street, garden, court, &c. and sometimes for any side opposite to the eye.

FACE, in fortification, an appellation given to several parts of a fortress, as the face of a bastion, &c. See *Bastion*. The face of a place is the front comprehended between the flanked angles of two neighbouring bastions, being composed of a curtain, two flanks, and two faces; and is likewise called the *tenaille* of a place.

Prolonged FACE, that part of the line of defence razant, which is between the angle of the shoulder and the curtain, or the line of defence-razant, diminished by the length of the face.

FACE, in the military art, a word of command, intimating to turn about; thus, *face to the right*, is to turn upon the left heel a quarter-round to the right; and, *face to the left*, is to turn upon the right heel a quarter-round to the left.

FACE of Plants, among botanists, signifies their general appearance.

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FACTION, a cabal or party.

FACTION, in antiquity, a name given to the different companies of combatants in the circus.

FACTITIOUS, made by art, in opposition to natural.

FACTOR, in commerce, is an agent or correspondent residing beyond the seas, or in some remote part, commissioned by merchants to buy or sell goods on their account, or assist them in carrying on their trade.

FACTOR, in multiplication, a name given to the multiplier and multiplicand, because they constitute the product.

FACTORAGE, called also commission, the allowance given to factors by the merchant who employs them.

FACTORY, a place where a considerable number of factors reside to negotiate for their masters or employers.

FACULTY, in law, a privilege granted to a person, by favour and indulgence, of doing, what, by law, he ought not to do. For granting these privileges, there is a court under the archbishop of Canterbury, called the court of the faculties, the chief officer of which is styled master of the faculties; who has a power of granting dispensations in divers cases, as to marry without the banns being first published; to ordain a deacon under age; for a son to succeed his father in his benefice; a clerk to hold two or more livings, &c.

FACULTY, in the schools, a term applied to the different members of an university, divided according to the arts and sciences taught there.

FACULTY of Advocates, a term applied to the college or society of advocates in Scotland, who plead in all actions before the court of session.

FACULTY is also used to denote the powers of the human mind, viz. understanding, will, memory, and imagination. See *Understanding*.

FÆCES, properly the lees or grounds of any fermented liquor; but generally, in medicine, it is understood of wine; though the sediment of any liquid is called *fæx* or *fæces*: by this is also understood the excrements of the belly.

FÆCES, in chemistry, whatever remains in the vessel after distillation, &c.

FÆCULENT, in general, is applied to things abounding with fæces, or dregs; thus the blood and other humours of the human body, are said to be *fæculent*, when without that purity which is necessary to health.

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FAG-END, in the sea-language, the end of any rope which is untwisted and loosened by frequent use.

FAGONIA, the cretic trefoil, in botany.

FAGOTTINO, in music, a single curtail, a musical instrument something like the bassoon. See *Bassoon*.

FAGOTTO, in music, the double curtail, or in reality a double bassoon, as large again as the former.

FAILURE, a species of bankruptcy, commonly called breaking, or stopping payment. See *Bankruptcy*.

FAINT-ACTION, in law, a feigned action, or such as, although the words of the writ are true, yet, for certain causes, the plaintiff has no title to recover thereby.

FAINTING. See *Lipothymia*.

FAIR, a greater kind of market, granted by privilege, for the more speedy and commodious providing of such things as the place stands in need of.

FAIRY, or **FARE**, in romances, a kind of imaginary genii, conversant on earth, and distinguished by abundance of fantastical actions and offices, good or evil. Fairies are of Oriental extraction, and seem to have been invented by the Persians and Arabs, whose history and religion abound with tales of the fairies and dragons. Spenser's *Fairy Queen* is an epic poem, under the persons and characters of the fairies. In this kind of writing the poet loses sight of nature, and entertains his readers with characters of fairies, witches, magicians, demons, and departed spirits. It requires an odd turn of thought, and an imagination naturally fruitful and superstitious. The poet ought likewise to be well versed in legends, fables, antiquated romances, and the tradition of our nurses, in order to fall in with those natural prejudices and notions which we have imbibed in our infancy.

The whole substance of this poetry owes its original to the darkness and superstition of later ages, when pious frauds were made use of to amuse and frighten mankind into a sense of their duty. Men of cool temper object to it, that it has not probability enough to affect the imagination.

FAIRY-CIRCLE, or **RING**, is a phenomenon pretty frequent in the fields, &c. being a kind of circle, which the vulgar suppose to be traced by the fairies in their dances.

FAITH, *Fides*, in antiquity, was deified by the Romans, and had a temple in the Capitol.

Public faith is represented on medals

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sometimes with a basket of fruit in one hand, and some ears of corn in the other; and sometimes holding a turtle-dove. But the most usual symbol is with her two hands joined together.

FAITH, in divinity and philosophy, the firm belief of certain truths upon the testimony of the person who reveals them. The grounds of a rational faith are, 1. That the things revealed be not contrary to, though they may be above natural reason. 2. That the revealer be well acquainted with the things he reveals. 3. That he be above all suspicion of deceiving us. Where these criterions are found, no reasonable person will deny his assent: thus, we may as well doubt of our existence, as of the truth of a revelation coming from God, who can neither be deceived himself, nor deceive others by proposing things to be believed, that are contradictory to the faculties he has given us. Whatever propositions, therefore, are beyond reason, but not contrary to it, are, when revealed, the proper matter of faith.

FAITHFUL, an appellation assumed by the Mahometans. See *Mussulmen*.

FALCATED, something in the form of a sickle; thus, the moon is said to be falcated when she appears horned.

FALCO, in ornithology, a genus of birds, of the order of the accipitres, with three toes always before, and only one behind.

This genus comprehends the falcon kind, properly so called, the hawk, gyrfalcon, eagle, buzzard, pygargus, lannar, kite, kestrel, &c.

FALCON, or **FAULCON**, in gunnery, a piece of cannon.

FALCONET, or **FAUCONET**. See *Cannon*.

FALCONRY, the art of taming, managing, and tutoring hawks and falcons to catch their prey.

FALDAGE, an ancient privilege reserved to lords, of setting up folds for sheep in any fields within their manors, for the better manuring of the same; and this, in former times, was usually done as well with their tenants' sheep as with their own.

FALL, the descent of a heavy body towards the center of the earth. See *Descent*, *Gravity*, *Acceleration*, &c.

FALLACY, a deception, fraud, or false appearance.

FALLACY, or *Syllogistical FALLACY*, in logic, a captious argument, which, on account of its apparent goodness and defect, is made use of to deceive a re-

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spondent not well versed in the art of sophistry.

FALLING-SICKNESS, the same with epilepsy.

FALLOPIAN TUBES, in anatomy, appendages of the uterus. See *Generation*.

FALLOW, a pale red colour, like that of brick half burnt: such is that of a fallow deer.

FALLOW-FIELD, or **FALLOW-GROUND**, land laid up, or that has lain untilld for a considerable time.

FALLOWING of Land, a particular method of improving land. The great benefit of fallowing appears by the common practice of landlords, who every where take care to oblige their tenants to a strict observance of it once in three years; few lands being able to bear two crops without it. It appears that none will find a year's fallowing a loss to them, let their lands be what it will; but, more particularly, the advantage, of fallowing consists in, first, its laying the land in ridges, and its exposing it to the frost, wind, sun, and dews, all which sweeten and mellow the land very much; the often stirring of it, and breaking the clots, dispose it for the bearing of good crops. Secondly, it kills the weeds, by turning up the roots to the sun and air; and kills not only the weeds that grew with the last corn, but wild oats, darnel, and other weeds that sow themselves, and that as soon as they begin to peep out of the ground; so that they have no time to suck out any of the heart of the land.

The way of ordering fallow-lands is, after the crop is off, to let the land lie all winter, and what grass and weeds grow on it, to eat off with sheep in April, or beginning of May. As soon as they have done sowing of corn, they begin to plow up their fallows. This first fallowing in many places, ought to be very shallow, well turned, and clapped close together, because the thinner the turf is, the easier will it dry through, and kill the weeds, especially if the weather be dry: but, in some places, where there is a very cold clay, that will not bear corn well without being exposed to the heat of the sun to warm it, they plow their first plowing the depth they design to go. About June is the time of the second plowing, which they call *twy-fallowing*; at which plowing, you must go your full depth. About the latter end of July, or the beginning of August, is the time of *twy-fallowing*, or last plowing, before they sow their rye or

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wheat: but some plow up their land oftener.

If the land rise full of clots, and if it is a binding land, you must make it fine by harrowing of it, when rain comes; but then you must not let it lie long before you strike, rise, or plow it up into small ridges, especially if it is wet land; and as near as you can leave no weeds, turf, or grass unkilld, or unbroke with your harrows. But if your land will dissolve well with the frost, it is best to let it lie a little rougher, especially if you design to sow it with barley; for the rougher it lies for a winter-fallowing, the better. If the winter does not dissolve the clots, which it will not do in binding lands, you must wait rain for the fallowing of it. Where the land is but indifferent, and the manure is not to be got, fallowing every other year is found a great improvement. In some places they take a crop of wheat, and a crop of pease, and so fallow their land again.

FALSE, contrary to truth, or not what it ought to be: thus we say, a false witness, false action, false weights, false claim, false imprisonment, &c.

FALSHOOD, in philosophy, an act of the understanding representing a thing otherwise than it is as to its accidents.

FAMILY, *Familia*, the persons that live together in one house, under the direction of one head or chief manager. It also signifies the kindred or lineage of a person.

FAN, a machine used to raise wind and cool the air by agitating it.

FAN is also used as an instrument for winnowing corn.

FANATICS, wild, enthusiastic, visionary persons, who pretend to revelation and inspiration.

FANCY, or **IMAGINATION**. See *Imagination*.

FANIONS, in the military art, small flags carried along with the baggage.

FARCE originally implied little pieces of drollery exhibited by mountebanks and their buffoons, to gather the people together.

The word is French, and signifies forced meat or stuffing.

Farce is at present of more dignity: it is removed from the street to the theatre, and instead of being performed by merry-andrews to amuse the rabble, is acted by comedians, and becomes the entertainment of a polite audience. Poets have reformed the wildness of the primitive farces, and brought

brought them to the taste and manner of comedy. The difference of the two upon the English stage is, that comedy keeps to nature and probability, and therefore is confined to certain laws prescribed by ancient critics; whereas farce disallows of all laws, or rather sets them aside on occasion. Its end is purely to make merry, and it sticks at nothing which may contribute thereto, however wild and extravagant. Hence the dialogue is usually low, the persons of inferior rank, the fable or action trivial or ridiculous, and nature and truth every where exaggerated to afford the more palpable ridicule. The ancient farces seems to have been a true imitation of the antique mimes.

FARCIN, or FARCY, in farriery, a distemper of the blood vessels, which generally follows the course of the veins, and when inveterate thickens their coats and integuments.

At first one or more small swellings, or round buds like grapes or berries, spring out over the veins, and are often exquisitely painful to the touch; in the beginning they are hard, but soon turn into soft blisters, which, when broke, discharge an oily or bloody ichor, and turn into very foul and ill disposed ulcers. In some horses it appears on the head only; in some on the external jugular; in others on the plate vein, and runs downwards on the inside of the fore-arm towards the knee, and very often upwards towards the brisket; in some the farcy shews itself on the hind parts, about the pasterns, and along the large veins on the inside of the thigh, rising upwards into the groin, and towards the sheath; and sometimes the farcy makes its appearance on the flanks, and spreads by degrees towards the lower belly, where it often becomes very troublesome.

When the farcy appears on the head only, it is easily cured; especially when it is seated in the cheeks and forehead, the blood vessels being here small; but it is more difficult when it affects the lips, the nostrils, the eyes, and kernels under the jaws, and other soft and loose parts, especially if the neck veins becomes chorded. When it begins on the outside of the shoulder or hips, the cure is seldom difficult: but when the farcy arises on the plate vein, and that vein swells much, and turns chorded, and the glands or kernels under the arm-pit are affected, it is hard to cure; but more so when the crural veins within side of the thigh are chorded,

and beset with buds, which affect the kernels of the groin, and the cavernous body of the yard. When the farcy begins on the pasterns or lower limbs, it often becomes very uncertain, unless a timely stop is put to it; for the swelling in those dependant parts grows so excessively large in some constitutions, and the limbs so much disfigured thereby with foul sores and callous ulcerations, that such a horse is seldom fit for any thing afterwards, but the meanest drudgery: but it is always a promising sign, wherever the farcy happens to be situated, if it spreads no farther. It is usual to affect only one side at a time, but when it passes over to the other, it shews great malignancy; when it arises on the spines, it is then for the most part dangerous, and is always more so to horses that are fat and full of blood, than to those that are in more moderate case. When the farcy is epidemical, as sometimes happens, it rises on several parts of the body at once, forms nasty foul ulcers, and makes a profuse running of greenish bloody matter from both nostrils; and soon ends in a miserable rot.

From this description of the farcy, it will appear how greatly those may be disappointed, who depend on some single specific drink or ball for a certain cure; for the symptoms are sometimes so favourable, that it is easily conquered by a very simple management; and when it arises superficially upon the smaller vessels, it will often go off, with moderate labour, without any other means than bleeding. Such instances as these may easily give a reputation to things of no great efficacy, and bring them into esteem: but whoever has acquired any true notion of the farcy, will know that this distemper is not to be conquered but by such things as are fitly adapted to the various symptoms that occur in the different stages of it. To avoid the perplexity that arises from the various complications so usual in the farcy, we shall consider it in its different states, or degrees; viz. when it seizes only the smaller vessels; when the larger veins are chorded, and the feet, pasterns, and flanks affected: and lastly, when the farcy beginning on one side only, breaks out on the other also, and affects the whole body.

When the farcy makes its first appearance on the head, it rises on the cheeks and temples, and looks like a net-work, or small creeping twigs full of berries. Sometimes it inflames the eye, and sometimes little blisters or buds run along the
side

side of the nose. It rises often on the outside of the shoulder, running along the small veins with heat and inflammation; and sometimes a few small buds appear near the withers, and on the outside of the hip. In all these appearances, the disease being superficial, and affecting only the smaller vessels, is easily conquered by the following method, when taken in time; for the simplest farcy, if neglected, may degenerate into the worst sort.

This distemper then being of an inflammatory nature, and in a particular manner affecting the blood vessels, must necessarily require large bleeding, particularly where the horse happens to be fat and full of blood. This always checks the beginning of a farcy, but is of small service afterwards; and if a horse is low in flesh, the loss of too much blood sometimes proves injurious. After bleeding, let the horse have four ounces of cream of tartar and lenitive electuary; which may be given every other day for a week, to cool the blood, and open the body; and then give nitre three ounces a day, for three weeks or a month; and anoint the buds and swellings with the following ointment twice a day.

“Take ointment of elder four ounces, oil of turpentine two ounces, sugar of lead half an ounce, white vitriol powdered two drams; mix together in a gally-pot.”

The buds sometimes by this method are dispersed, leaving only little bald spots, which the hair soon covers again. When they break and run, if the matter be thick and well digested, they will soon be well: but in order to confirm the cure, and to disperse some little lumps, which often remain some time on the skin without hair, give the liver of antimony for a month; two ounces a day for a fortnight, and then once a day for the other fortnight; by following this method, a farcy which affects only the small vessels, may be stopped in a week or ten days, and soon after totally eradicated.

When the farcin affects the larger blood vessels, the cure is more difficult, but let it always be attempted early: therefore, on the plate, thigh, or neck veins appearing chorded, bleed immediately on the opposite side, and apply the following to the chorded vein.

“Take oil of turpentine in a pint bottle six ounces, oil of vitriol three ounces; drop the oil of vitriol into the oil of turpentine by little at a time, otherwise the bottle will burst; when it has done sinoak-

ing, drop in more oil of vitriol, and so on till all his mixed.”

This mixture is one of the best universals in a beginning farcy; but where it is seated in loose-fleshy parts, as flanks or belly, equal parts of the oil of vitriol and turpentine are necessary.

Rub the parts first with a woollen cloth, and then apply some of the mixture over the buds, and wherever there is any swelling, twice a day. Give the cooling physick every other day, and then three ounces of nitre every day for some time. This method must be continued till the buds digest, and the chords dissolve; and when the sores run plentifully, the matter digests well, and the lips and edges are no ways thick or callous, you may expect a speedy recovery; yet to confirm the cure, and prevent a relapse, give the liver of antimony or crude antimony, as before directed; and to heal the sores and smooth the skin, dress with bees-wax and oil. *Bartlet's Farriery.*

FARE, the money paid for a voyage, or passage, by water; or for being conveyed from one place to another in a coach or chair.

FARINA FOECUNDANS, among botanists, the impregnating meal or dust on the apices or antheræ of flowers; which being received into the pistil, uterus, or seed vessel of plants, fecundates the rudiments of the seeds in the ovary, which otherwise would decay and come to nothing. See *Generation of Plants.*

FARM, or FERM, the chief messuage in a village, or any large messuage whereunto belongs land, meadow, pasture, wood, common, &c. and which has been used to let for term of life or years, under a certain yearly rent payable by the tenant for the same.

FARMER, one who occupies or is lessee of a farm, whether for life or years.

FARMER, among miners, the lord of the field, or the person who farms the lot and cope of the kin

* FARQUHAR, (GEORGE) an excellent comic poet, was born in Londonderry in Ireland, in the year 1678, and early discovered a genius for poetry. He studied in Trinity college, Dublin, but his mind being attracted by the polite entertainments of the town, and Mr. Robert Wilkes, being at that time at Dublin, prevailed upon Mr. Farquhar to appear upon the stage, on which he met with some success, but playing the part of Guyomar, in Dryden's Indian emperor, who kills

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kills Vafquez, one of the Spanifh generals, and forgetting to exchange his fword for a file, dangerously wounded his brother tragedian; and though it did not prove mortal, it gave fuch a fhock to Mr. Farquhar, that it put a period to his acting for ever. Soon after this Mr. Farquhar accompanied Mr. Wilkes to London, and perfuaded him, that his genius was fitter for furnifhing compositions for the ftage, than for echoing thofe of others. To this he was alfo about the fame time invited, by his obtaining a genteel fubfiftence, which allowed him an opportunity of exerting his abilities at his leifure; for the earl of Orrery gave him a lieutenant's commiffion in his own regiment in Ireland, which he held feveral years, behaved well as an officer, and gave feveral proofs of his courage and conduct. In 1698, his firft comedy, called *Love and a Bottle*, was acted at the theatre-royal in Drury-lane, and was well received. The year after, the celebrated Mrs. Oldfield, who was then but fixteen years of age, was, partly by his judgment and recommendation, admitted on the ftage. In the year 1700, the very year the jubilee was celebrated at Rome, was brought on the ftage his *Trip to the Jubilee*, which was received with fuch applaufe, that the next year, appeared a fequel to it, under the title of *Sir Harry Wildair*. This was followed by the *Inconftant*, *Twin Rivals*, *Recruiting Officer*, and the *Beaux Stratagem*; but while this laft play was acting at Drury-lane with the greateft applaufe imaginable, Mr. Farquhar died in April, 1707, before he was thirty years of age. Befides the above performances, he wrote a farce, called the *Stage Coach*, and *Mifcellanies*, which confift of a Collection of Poems, Letters, and Effays.

FARRIER, one whole employment is to fhoe horfes, and cure them when difeafed.

FARRIERY, the art of trimming the feet, and curing the difeafed horfes. See *Horfe*.

FARTHING, the leaft copper coin ufed; in Britain, being half of the half-penny. See *Exchange*.

FASCES, in Roman antiquity, axes bound up together with rods or ftaves, and carried before the Roman magiftrates as a badge of their authority and office.

FASCIA, in architecture, any flat member having a confiderable breadth and but a fmall projecture, as the band of an architrave, larmier, &c.

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FASCIAS, in brick buildings, certain juttings out of the bricks over the windows of each ftory, except the upper one. Thefe are fometimes plain, like thofe of columns; but fometimes they are moulded, and the moulding is ufually a fcima reverfa at the bottom, above which are two plain courfes of bricks, then an aftragal, and laftly, a boultin. See *Aftragal* and *Boultin*.

FASCIA LATA, in anatomy, the name of a mufcle, or muscular ligament. It is very confiderable for its extent and ftrength, being compofed principally of two planes of fibres, of which the external are more or lefs longitudinal; the internal more or lefs tranfverfe. It is further ftrengthened in fome places by a great number of other fibres, which augment its thicknefs, and form particular expansions. The tranfverfe fibres are much ftronger than the longitudinal.

The *mafculus FASCIÆ Latæ* is a fmall and pretty long mufcle, fituated fomewhat obliquely upward and downward, on the fore-part of the hip.

FASCIÆ, in aftronomy, feveral rows of bright fots on Jupiter's body, refembling belts or fwaths.

Thefe fasciæ or belts are more lucid than the reft of the planet's difk, and are terminated by parallel lines. Some have imagined that they are long canals of fome fluid matter, or water; and becaufe they have difcovered feveral dark fots on his difk, they conclude that the planet's furface is divided into land and water, like that of our globe.

FASCINATION, a kind of witchcraft or enchantment, fupposed to operate by the influence of the eye or tongue.

FASCINES, or **FAGGOTS**, in fortification, fmall branches of trees or bavons bound up in bundles, which are ufed in an army, in order to cover themfelves, and burn the enemies lodgments; and which, when mixed with earth, ferve to fill up ditches, mend roads, &c.

FASHION, a term ufed among artificers in gold and fiver, for the trouble, time, and labour employed in a piece of work. It is by the fashion that workmens wages are regulated.

FAST, or **FASTING**, abftinence from food: but is more particularly ufed for fuch abftinence on a religious account.

FAST-DAYS, thofe appointed, by public authority, to be obferved in fasting and humiliation.

FASTI, in Roman antiquity, the calendar

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lendar wherein were expressed the several days of the years, with their feasts, games, and other ceremonies.

FAT, in anatomy, an oily, sulphureous part of the blood, deposited in the cells of the membrana adiposa, from the innumerable little vessels which are spread amongst them.

This fat is to be found immediately under the skin, in all the parts of the body, except the forehead, eye-lids, lips, upper-part of the ear, penis, and scrotum. In some bodies the vesicles of the membrana adiposa are so full, that the fat is an inch or more thick; and in others they are almost flat, containing little or no fat. There are two sorts of fat, one white, or rather yellow, soft and lax, which is easily melted, and is called pinguedo; another white, firm, brittle, and which is not easily melted, called sebum, suet or tallow. Some reckon the marrow of the bones for a third sort of fat.

FAT, or VAT, is also used for several utensils, as, 1. A large wooden vessel, used for the measuring of malt, and containing a quarter, or eight bushels. 2. A large brewing vessel, used by brewers to run their wort in. 3. A leaden pan or vessel for the making of salt at Droitwich.

FAT likewise denotes an uncertain measure of capacity. Thus a fat of isinglass contains from three hundred and a quarter to four hundred weight; of wine, from twenty to twenty-five hundred weight; and of yarn, from two hundred and twenty, to two hundred and twenty-one bundles.

FATE, or DESTINY, something supposed to infer the necessity of any event, the cause of which we are but very little acquainted with, and which arises from a power superior to any that is subject to man.

The Stoics who admitted a providence, however, subjected it to fate; and yet they did not make it more inflexible than the predestination of the Calvinists.

FATHER, a term of relation denoting a person who hath begot a child.

FATHER, in theology, is used in speaking of the first person of the Trinity. See *Trinity*.

FATHER, in church history, is applied to ancient authors who have preserved in their writings the tradition of the church.

FATHER, a title of honour given to prelates and dignitaries of the church, to the superiors of convents, to congregation of ecclesiastics, and to persons venerable for their age and quality.

F E A

FAUNS, FAUNI, or SATYRS, were a kind of rural deities, or rather demigods, among the Romans, and inhabited the woods; wherefore they were called sylvani; they were companions of Pan or Faunus. They were not known among the Greeks. The Latins represented them half man and half goat, with the horns, ears, feet, and tail of a goat; a flat nose, and with hair on their bodies. The wild pine and olive were consecrated to the Fauns.

* FAUNUS, in fabulous history, king of the Aborigines, or country of the Latins, succeeded his father Picus, about the one thousand two hundred and twentieth year before the Christian æra. He is said to have instituted a great number of religious ceremonies, and to have kept himself almost always concealed, on which account he was confounded with the god Pan. His children, called Fauni or Fauns, were visionary beings, much like the Satyrs, and were usually crowned with pine.

* FAVOUR, in pagan worship, a fabulous deity, which some will have the daughter of Fortune, others of Beauty, and a third, the daughter of Wit. Appelles painted her with wings, walking with Flattery before her, Pride, Honour, and Pleasure around her; and Envy at her heels.

FAUSSE-BRAYE, in fortification, a mount or rampart, of four fathoms width, on the outside of the first rampart, that goes quite round the place, in order to defend the fosse; and is covered with a parapet.

* FAUX, (GUY) was executed in Parliament-yard, January 31, 1606, for the Gun-powder-plot.

FAWN, among sportsmen, a buck or doe, of the first year; or the young of the buck's breed in its first year.

FEALTY, in law, an oath taken on the admittance of any tenant, to be true to the lord of whom he holds his land.

* FEAR, one of the Passions, to which the Greeks and Romans erected temples, where they offered up their supplications, to be preserved from this passion in the day of battle, &c.

FEAST, or FESTIVAL, any solemnity or festivity; but, in the church, it signifies those days which are observed in honour of God or of some saint. According to Athenæus, feasts were occasioned by devotion to the gods; for though on festival days people rested from their labour, and lived more plentifully than at other times, yet believing the gods were present

present at their tables, they behaved with sobriety; neither did they drink to excess, but after a moderate refreshment, offered libations and so departed home.

At Athens no person was allowed to entertain above thirty at once. Men and women were never feasted together, as Cicero informs us, *Orat. 3. in Verrem*, wherein the Greeks differed from the Romans, amongst whom women were allowed more freedom. Before people went to an entertainment, they anointed themselves. They who came off a journey were washed and cloathed in the house of the entertainment, before they were admitted to the feasts. They were usually clad in white, or some such chearful colour; they washed their hands before they sat down, and between every course, and after supper.

FEATHER, *Pluma*, the parts which covers birds, and enables them to fly. See *Bird*.

Prince's **FEATHER**, a plant otherwise called amaranth.

FEBRIFUGES, in medicine, are such things as mitigate or remove a fever; they are otherwise called antifebrilia.

FEBRUARY, the second month in the year, reckoning from January. It was added to Romulus's calendar by Numa Pompilius. The word is derived from *februa*, which was a certain kind of ceremony performed in that month, in which wax candles and flambeaux were lighted at the graves of the dead, and oblations made to their manes.

FEE, in law, a certain allowance to physicians, barristers, attornies, and other officers, as a reward for their pains and labour.

FEE, a settled perquisite of public officers, payable by those who employ them.

FEE-ESTATE, that held by the benefit of another, and for which some service, rent, or acknowledgment is paid to the chief lord, or superior, in whom the mere propriety of the soil always continues.

Fee is generally divided into absolute and constitutional. Absolute, otherwise termed fee-simple, is where a person is seized of lands or tenements, to him and his heirs for ever; whereas, fee-tail, or conditional fee, is where a person is seized of lands, with a limitation to him and the heirs of his body. A fee-simple is the largest estate a person can have, and can be conveyed by no other expression, but heirs for ever; yet, in a will, which is more favoured than a grant, the intention

of the testator is more considered than the literal meaning of the words

FEE-FARM, a kind of tenure without homage, fealty, or other service, except that mentioned in the feoffment; which is usually the full rent, or at least a fourth part of it. The nature of this tenure is, that if the rent be behind, and unpaid for two years, then the feoffer and his heirs may have an action for the recovery of the lands.

FEELING, TOUCHING, one of the external senses, by which we attain the ideas of solid, hard, soft, rough, cold, wet, dry, and other tangible qualities. The feeling participates of less delicacy than the other senses, but at the same time surpasses them in point of certainty. It absolutely cuts off all incredulity; besides which good property, it enjoys that of being the most general sensation. Seeing and hearing result from the organization of a very minute portion of our structure; but it is requisite that every part of the animal œconomy should be endued with the faculty of feeling, to distinguish us from mere machines, that may be taken to pieces at pleasure, without the consciousness of any violence offering to their mechanism. This is what nature has furnished; and wherever we find nerves and life, there also subsists this sort of sensation; which does not seem to stand in need of any particular organization, or to depend on the structure of the nervous papillæ, the simple solid texture of the nerve being alone sufficient to produce it.

All matter, of sufficient consistence or solidity to affect the surface of our skin, becomes the object of feeling. This sense ascertains the bulk and figure of bodies, their distance, inaction, motion, solidity, softness, fluidity, heat, coldness, dryness, moisture, &c. these are its proper objects. The sensation of warmth or heat is a sort of light emotion, or irritation of our nervous parts, and an expansion of our solids and fluids, produced by the slight action of a moderate quantity of the subtile matter that composes fire, or the origin of heat, whether natural or artificial. When this matter either exceeds in quantity, or is more than ordinarily agitated, then, instead of irritating or expanding our solids and fluids, it tears and dissolves them; and this violence of action causes an inflammation. The sensation of cold, on the contrary, is a sort of obstruction in the nervous papillæ, and generally in all the

solids, and a condensation or defect of motion in our fluids, arising either from the conduct of some cold substance; that is to say, of a substance that is not to any degree impregnated with subtile agitated matter, like the air or water; or by any other accidental cause, whereby the motion of our fluids, and natural elemental heat, is suppressed, like the periodical convulsion of the solids that produces the shivering in an ague.

The skin which is the organ of feeling, is a composition of fibres, nerves, and vessels, which are interwoven one with the other in such an extraordinary manner, that the texture, in some measure resembles net-work. See *Cutis*.

This fibrous texture is visible in thick shammy, and in the soles of shoes made of a thick and soft leather, where, indeed, the fibres appear very distinctly.

FEINT, in music, the same with diesis.

FEINT, in fencing, a shew of making a thrust at one part, in order to deceive the enemy, that you may really strike him in another. A simple feint is a mere motion of the wrist, without stirring the foot.

FELIS, in zoology, is used by Linnaeus as the name of a large genus of quadrupeds, of the order of the fœxæ. To this genus belong the lion, tiger, leopard, cat, cat of the mountain, lynx, and ounce.

FELLING of Timber. Many circumstances are well known and constantly observed in the felling of timber for building, which, though to a hasty observer they might appear trifling, yet prove, on experience, to be of the utmost consequence. One thing observed by Mr. De Buffon, which very greatly increases the solidity and strength of timber, is, that the trees intended to be felled for service should first be stripped round of their bark, and suffered to stand and die upon the spot before the cutting. The sappy part, or blea of the oak; becomes by this means as hard and firm as the heart, and the real strength and density of the wood has been proved, by many experiments, to be greatly increased by it; nor is this a practice of any detriment to the proprietor, since the remaining stumps of these trees send up their young shoots as vigourously as if they had been cut down in their natural condition. When any tree is to be cut down for timber, the first thing to be taken care of is a skilful disbranching such limbs as may endanger it in its fall: many trees are utterly spoiled for want of a previous

care of this kind. In arms of timber that are very great, it is always necessary to chop or sink in them close to the bole, and then, meeting it with down-right strokes, it will be severed from the tree without splitting. In felling the tree, take care always to cut as close to the ground as possible, unless it is intended to be grubbed up; and the doing this, is of advantage both to the timber, and to the wood; for timber is never so much valued, if it be known to grow out of old stocks.

FELLOWSHIP, COMPANY, or PARTNERSHIP, in arithmetic, a rule of great use in balancing the account of several partners trading in a company, so that every partner may have his just part of the gain, or sustain his just part of the loss, according to this proportion: this falls under two considerations, called the *Single* and *Double Rule of Fellowship*.

Single FELLOWSHIP, or *FELLOWSHIP without Time*. By this rule are adjusted the accounts of those partners that put all their several, and perhaps different, sums of money into a common stock at one and the same time; and therefore it is usually called the Rule of Fellowship without Time: questions of this nature are answered by so many several operations in the Rule of Three direct, as there are partners in the stock.

Example 1. Suppose three partners, A, B, and C, make a joint stock of 192 l. in this manner: A puts in 48 l. B puts in 64 l. and C puts in 80 l. with this 192 l. they trade and gain 24 l. it is required to find each man's true part of that gain?

Here it will be as the sum of the stocks 192 l. is to the total gain 24 l. so is each man's particular stock to his respective share of the total gain: wherefore in this case A's share of the gain will be 6 l. B's 8 l. and C's 10 l.

Proof. $6\text{ l.} + 8\text{ l.} + 10\text{ l.} = 24\text{ l.}$ the whole gain.

That is, if the sum of each man's particular gain amount to the whole gain, the work is true; if not, some error is committed which must be found out.

Double FELLOWSHIP, or *FELLOWSHIP with Time*.—This is usually called the Double Rule of Fellowship, because any particular man's money is to be considered, with relation to the time of its continuance in the joint stock.

Example 1. A and B join in partnership upon these terms, viz. A agrees to lay down 100 l. and to employ it in trade three months; then B is to lay down his 100 l.

and

F E M

and with the whole stock of 200 l. they are to trade three months more. Now, at the end of this time, they find their whole gain to be 21 l. it is required to know what each man's part of the gain ought to be, according to his stock, and the time of employing it?

Here it is but reasonable to conclude that, as the sum laid down by each person is the same, their respective gains should be in the proportion of the times those equal sums were employed; consequently as 9. the sum of the times, is 3 B's time, so is the whole gain 21 l. to 7 l. B's share of the gain, which taken from 21 l. leaves 14 l. for the share of A.

If in the above example the times had been equal, but the sums laid down unequal, it is evident the whole gain in that case must have been divided between the partners in the ratio of the sums adventured; whence it follows, that when the stocks and times of continuance are respectively unequal, the total gain must be divided in the ratio compounded of each man's money and time respectively. Therefore, in order to resolve all questions of this nature, be the partners never so many, observe this rule.

Multiply every particular man's stock, with the time it is employed; then it will be as the sum of all these products is to the whole gain or loss; so is every one of these products to its proportional part of that whole gain or loss.

FELO DE SE, in law, a person that deliberately lays violent hands on himself, and is the occasion of his untimely death, whether by hanging, drowning, or any other way.

FELON, in law, a person guilty of felony.

FELON-WORT, in botany, the same with the solanum, or deadly nightshade.

FELONY, in law, a capital crime, next in degree to petit treason; as murder, theft, rape, &c.

FELT, in commerce, a kind of stuff, composed either of wool alone, or of a mixture of wool and hair; but neither spun nor wove, deriving all its consistence from being fulled, or wrought, with lees and fize.

FEMALE, a term peculiar to animals, signifying that sex which conceives and generates its young within itself. The word is also applied, in a figurative sense, to inanimate objects, from the resemblance they bear to the female of animals: thus we say, a female screw, a female flower, &c. See *Flower*, *Screw*, &c.

F E N

FEMME COVERT, in law, a married woman. See *Coverture*.

FEMME SOLE, an unmarried woman, whose debts contracted before marriage, become those of her husband after that ceremony has been performed.

FEMININE, in grammar, is that gender which denotes a female.

FEMUR, the thigh in anatomy, that part of the body intercepted between the buttocks and the knee. See *Thigh*.

FEN, a general name for boggy or marshy land, commonly overflowed with water. In draining these sort of lands, which is the only method of making them useful, trenches and drains for carrying off the water must be formed, in order to render the surface dry, and of a proper consistence for producing vegetables. This may be attempted by various methods; but whatever mode of proceeding be adapted, the lowest part of the ground is to be found out first, and the overflowing from great rains, and from land-floods, must be provided for, in the carrying off that way; for, should this be neglected, all the labour and cost employed on the other principle would be thrown away. If it is found that this can be done, there must be afterwards cut a large drain through the middle of the land, and several smaller drains communicating with this.

The greater drain must be dug deep enough to drain the whole level; and this, and all the others, must be made the narrowest at the head, and wider all the way to the mouth, where it must be widest of all. The wet grounds, called fens, in Lincolnshire and elsewhere in England, bring many advantages to the inhabitants of those countries. Fowl and fish are very plentiful in them. The pike and eels are large, and easily caught, but they are usually coarse. The duck, mallard, and teal are in such plenty, as is scarce to be conceived; they are taken in decoys, by prodigious flocks at a time. They send these fowl to London from Lincolnshire, twice a week on horse-back, from Michaelmas to Lady-Day, and one decoy will furnish twenty dozen, or more, twice a week, for the whole season, in this manner. The decoy-men contract with the people who bring them to London at a certain rate, and they are obliged to take the whole number that is caught off their hands. About Midsummer, when the moulting season is, a great number are destroyed also by the people of the neighbourhoods. The poor birds at this time are neither able to swim nor to fly well;

and the people going in with boats among the reeds, where they lie, beat them down with long poles. A little before Michaelmas, vast flights of these birds arrive at the decoys from other places; they soon grow fat in them, and continue there a prey to the masters or owners, as long as the decoys are unfrozen; but, when they are iced over, they fly away again, and go to the neighbouring seas for food. *Philos. Transf.* No. 223.

FENCE, a hedge, wall, ditch, bank, or other inclosure, made round gardens, fields, woods, &c.

In hotter climates than England, where they have not occasion for walls to ripen their fruit, their gardens lie open, where they can have a water fence, and prospects; or else they bound their gardens with groves, in which are fountains, walks, &c. which are much more pleasing to the sight than a dead wall: but in colder countries, and in England, we are obliged to have walls to shelter and ripen our fruit, although they take away much from the pleasant prospect of the garden.

Since therefore we are under the necessity to have walls to secure our gardens from the injuries of winds, as well as for the convenience of partitions or inclosures, and also to ripen our fruit, brick walls are accounted the best and warmest for fruit: and these walls, being built panelwise, with pillars at equal distances, will save a great deal of charge, in that the walls may be built thinner than if they were built plain without these panels; for then it would be necessary to build them thicker every-where; and, besides, these panels make the walls look the handsomer.

Stone walls are to be preferred to those of brick, especially those of square hewn stones. Those that are made of rough stones, though they are very dry and warm, yet, by reason of their unevenness, are inconvenient to nail up trees to, except pieces of timber be laid in them here and there for that purpose.

But in large gardens it is better to have the prospect open to the pleasure garden; which should be surrounded with a fosse, that from the garden the adjacent country may be viewed; but this must depend on the situation of the place: for, if the prospect from the garden is not good, it had better be shut out from the sight by a wall, or any other fence, than to be open. As also, when a garden lies near a populous town, and the adjoining grounds are open to the inhabitants; if the garden is open,

there will be no walking there in good weather, without being exposed to the views of all passengers, which is very disagreeable.

Where the fosses are made round a garden which is situated in a park; they are extremely proper; because hereby the prospects of the park will be obtained in the garden, which renders those gardens much more agreeable than those which are confined.

In such places where there are no good prospects to be obtained from a garden, it is common to make the inclosure of park-paleing; which, if well performed, will last many years, and has a much better appearance than a wall: and this pale may be hid from the sight within, by plantations of shrubs and ever-greens; or there may be a quick hedge planted within the pale, which may be trained up, so as to be an excellent fence by the time the pales begins to decay.

There are some persons who make stuckade fences round their gardens to keep out cattle, &c. which, when well made, will answer the purpose of fences; but this being very expensive in the making, and not of very long duration, has occasioned their not being more commonly in use.

As to fences round parks, they are generally of paleing; which, if well made of winter-fallen oak, will last many years. The fence may be six feet and a half high, which is enough for a fallow deer; but, where there are red deer, the fence should be one foot higher, otherwise they will leap over.

Some inclose their parks with brick walls; and in countries, where stone is cheap, the walls are built with this material; some with, and others without mortar.

A kitchen garden, if rightly contrived, will contain walling enough to afford a supply of such fruits as require the assistance of walls for any family; and this garden, being situated on one-side, and quite out of sight of the house, may be surrounded with walls, which will screen the kitchen garden from the sight of persons in the pleasure garden; and, being locked up, the fruit will be much better preserved than it can be in the public garden.

The height of garden walls should be twelve feet, which is a moderate proportion, and, if the soil be good, it may in time be well furnished with bearing wood in every part, especially that part planted with pears, notwithstanding the branches being

F E R

being trained horizontally from the bottom of the walls.

I would recommend the white thorn, the holly, the black thorn, and crab, for outward fences to a good ground: but I do not approve of the intermixing them. *Mil-ler's Gardener's Dictionary.*

* FENELON (FRANCIS DE SALLIGNAC DE LA MOTTE) a celebrated archbishop of Cambray, and one of the greatest men the church of France has produced, was born of an ancient and noble family, at the castle of Fenelon, in the province of Perigord, on the 6th of Aug. 1651. He was educated at his father's house till he was twelve years of age, when he was sent to the university of Cahors, and afterwards finished his studies at Paris, under the care of his uncle Anthony, marquis of Fenelon, lieutenant-general of the king's armies, who was as much distinguished by his genius and exemplary piety, as by his courage. This nobleman treated him as his son. He began to preach with applause at nineteen years of age, but at the marquis's persuasions desisted. He received holy orders at the age of twenty-four. In 1689 he was made preceptor to the dukes of Burgundy, Anjou, and Berry, for whom he composed his *Telemachus*, in which he has exhausted all the riches of the French language. In 1693 he was made a member of the French academy, and in 1695 was made archbishop of Cambray. He resigned at the same time his abbey of St. Valeroy, and a small priory, believing that he could not in conscience possess any benefice with his archbishoprick. His merit, and the favour he enjoyed at court, seemed to promise him still more considerable preferments, but a storm was raised against him, which obliged him to leave the court for ever. Mr. M. Bossuet accusing him of quietism, and writing against his book of *Maxims of the Saints*, caused him to be condemned by several bishops. Fenelon published a great number of his works in his own defence, but these did not calm the storm. He was banished to his diocese in 1697, and pope Innocent XII. condemned twenty-three propositions in that work. Mons. de Fenelon immediately submitted to this censure, and declared his submission under his hand. Thus ended this famous dispute between two of the greatest bishops that have hitherto appeared in France. He now led an exemplary life at Cambray, acquitting himself very punctually of all the duties of his station, and by

F E N

his benevolence to those who differed from him, was so beloved and respected, that the protestant army, on entering the Cambrisis, spared his lands. He died at Cambray, on the 7th of January, 1715, aged sixty-four.

FENCING, the art of making a proper use of the sword, as well for attacking an enemy, as for defending one's self. Fencing is a genteel exercise, of which no gentleman ought to be ignorant. It is learned by practising with foils, called in Latin *rudes*. See *Foil*.

The principal intention, in respect to the offensive part, should be to attack the enemy in the most unguarded part; and in the defensive, to parry or ward off the enemy's thrusts and blows.

FENDUE *en Pal*, in heraldry, a cross clove down in pale, that is, from top to bottom, and the two parts set at some distance from each other.

FENNEL, *fœniculum*, in botany. See *Fœniculum*.

FENUGREEK, or FOENUGREEK. See *Fœnugreek*.

FEOFFMENT, in law, a gift or grant of any manors, messuages, lands, or tenements, to another in fee, by delivery of seisin, and, possession of the estate granted.

FERALIA, in antiquity, a festival observed amongst the Romans, in honour of the manes of their deceased friends and relations.

FERIÆ, in Roman antiquity, holidays, or days upon which they abstained from work.

FERMENT, any body which, being applied to another, produces fermentation. Ferments are either matters already in the act of fermentation, or that soon run into this act. Of the first kind are the flowers of wine, yeast, fermenting beer, or fermenting wine, &c. and of the second are the new expressed vegetable juices of summer fruits. Among distillers, ferments are all those bodies which, when added to the liquor, only correct some fault therein, and by removing some obstacle to fermentation, forward it by secondary means; as also such as being added in time of fermentation, make the liquor yield a larger proportion of spirit, and give it a finer flavour.

FERMENTATION, the intestine motion excited in vegetables, by which they are changed in such a manner, that the first thing that rises from them in distillation is acrid, mixable with water, of a warm aromatic taste, inflammable like oil,

F E R

oil, thin and volatile; or else acid, that will extinguish fire and flame, and is less thin and volatile.

The word is Latin, *fermentatio*, and derived from *fermentum*, leaven.

A certain degree of warmth seems requisite, in the northern climates, to all artificial liquors intended for immediate fermentation, especially in the winter: but the natural juices of vegetables that have never been inspissated, as that of grapes, and other fruits, when fully ripened, will usually ferment as soon as they are expressed, without any external assistance. In this state with proper contrivances to preserve and continue it, the liquor is to be put into a suitable vessel for fermentation; at which time, if it work not of itself, it must be quickened by additions; and, in general, by such things as are properly called ferments. See *Ferment*.

FERMENTED, in general, something that has undergone a fermentation.

FERN, *Filix*, in botany. There are great varieties of this plant, in different parts of the world; but we shall only mention two species, the male and the female.

The leaf of the male fern is composed of other leaves, which adhere to a rib in such a manner, as to have lobes on both sides, cut into the depth of the main fibre; the fruit resembles that of polypody.

The common female fern, or brakes, has many large leaves divided into several branches, beset with long, narrow, stiff, pinnulæ, which are mostly smooth about the edges, though sometimes they are a little indented: the back of these, about Midsummer, will be covered round the margins with a great number of dusky brown particles, which are the seed.

The seeds of the several species of fern were wholly unknown to the ancients. Swammerdam, in his *Biblia Naturæ*, claims to himself the honour of having first discovered them; but it appears from Hook's works, that Dr. William Cole sent an account of the seeds of several of the plants of this kind to that author, in 1669; whereas Swammerdam declares his discovery of them to have been in 1673; so that it is plain that Dr. Cole's was prior to his by some years.

* **FERRERS**, Laurence, Earl, was hanged at Tyburn for murder, May 5, 1760.

FERRET, *Viverra*, in zoology, a quadruped of the mustela kind. This animal is very common in England, but is a native of America.

F E V

FERRETTO, in the glass trade, a substance which serves to colour glass. This is made by a simple calcination of copper, but it serves for several colours.

FERRUGINOUS, any thing partaking of iron, or that contains particles of that metal. It is particularly applied to certain mineral springs, whose waters are impregnated with particles of iron, generally called chalybeats.

FERTILITY, that quality which denotes a thing fruitful or prolific.

FESSE, in heraldry, one of the nine honourable ordinaries, consisting of a line drawn directly across the shield, from side to side, and containing the third part of it, between the honour-point and the nombril. It represents a broad girdle, or belt of honour, which knights at arms were anciently girded with.

FESSE-POINT, the exact center of the escutcheon. See *Point*.

FESSE WAYS, or *In FESSE*, denotes any thing borne after the manner of a fesse; that is, in a rank across the middle of the shield.

Party per FESSE, implies a parting across the middle of the shield, from side to side, through the fesse-point.

FESTI DIES, in Roman antiquity, certain days in the year devoted to the honour of the gods.

FESTIVAL. See *Feast*.

FESTOON, in architecture and sculpture, &c. an ornament in form of a garland of flowers, fruits, and leaves, intermixed or twisted together.

It is in the form of a string or collar, somewhat biggest in the middle, where it falls down in an arch; being extended by the two ends, the extremities of which hang down perpendicularly.

Festoons are now chiefly used in friezes, and other vacant places, which want to be filled up and adorned; being done in imitation of the long clusters of flowers, which the ancients placed on the doors of their temples and houses on festival occasions.

FETLOCK, in the menage, a tuft of hair growing behind the pastern-joint of many horses; for those of a low size have scarce any such tuft.

FEUDAL, or **FEODAL**, denotes any thing belonging to a fee.

FEUDATARY, or **FEODATARY**, a tenant who formerly held his estate by feudal service.

FEVER, **FEBRIS**, in medicine, a disease, or rather class of diseases, whose charac-

characteristic is a preternatural heat felt through the whole body, or at least the principal parts of it.

All fevers, of what kind soever, are attended with a preternatural heat of the blood and humours, which impairs the bodily strength and its vital functions: wherefore nature raises all her forces, and engages the disease as a mortal enemy; and, if she gets the better drives out the cause of the disorder by such outlets as she is able. This action is by physicians called the crisis of the disease.

As there is no fever cured without some considerable evacuation, raised either by nature or by art, the physician ought carefully to observe which way nature seems to intend the expulsion of the morbid matter, and to assist her by all possible means. Now this expulsion is very frequently made through several outlets of the body at a time; and an evacuation by one outlet, more or less, checks that by another; thus a looseness checks a sweat, and *vice versa*: wherefore it is the physicians business to discern what evacuation is most likely to be of service, and so to promote this, as to give the least interruption possible to any other; for any one evacuation is not equally suitable to all persons, both on account of the difference of constitution and of diseases; although evacuations through every emunctory are sometimes necessary, as we find by experience in malignant fevers.

But of all solutions of the disease the most desirable is by sweat; next to that by stool and urine; the worst is by a hæmorrhage, whether it proceeds from the nose, or from any other part, because it indicates, that the blood is so far vitiated, that no proper separation of the humour can be made.

Lastly, some fevers terminate in abscesses formed in the glands, which, if they happen in the decline of the disease, and suppurate kindly, are salutary: wherefore the suppuration is to be forwarded by cataplasms or plasters, and sometimes by cupping on the tumour; and then, if the abscess does not break spontaneously, it ought to be opened with the knife or a caustic.

At this time this rule of practice is generally right, not to exhaust the patient's strength by evacuations of any kind: and yet in some cases there is a necessity for drawing a little blood; as when the humours are in great commotion, and the heat excessive; for this remedy, prudent-

ly administered, makes the tumour ripen kindly, because nature has always a great abhorrence of a turbulent state.

Continual FEVERS. There is no disease to which the useful precept, *principiis obsta*, is more applicable than to fevers; because in the beginning it is generally easy to do good; but when the distemper has gained ground, the cure is often attended with difficulty: for a medicine, which early administered might have prevented the impending danger, frequently fails when the bodily strength is exhausted by the violence of the disease. However, a patient who applies late for assistance, is not to be abandoned to his fate; since it is certain, that those diseases, which in old times were ascribed to the divine wrath, are frequently cured by natural means, even when they appear most desperate: wherefore the physician ought to lay it down as an absolute rule, never to be wanting in his duty.

And first, as blood letting is a most excellent remedy in the beginning of all fevers; if it has happened to be neglected for some days, let us consider whether it is still proper to be ordered.

In case of intolerable pain in any part of the body, of difficulty of breathing, or a delirium, blood is to be taken away, according to the patient's strength; with the lancet, if he be able to bear it; if too weak, by cupping; but if excessively so, by leeches: and if this may be done when the disease has got to the height, it ought for stronger reasons to take place in the beginning: and let me observe by the way, that leeches are often of vast service in a delirium. I have also sometimes found, by experience, that pieces of lamb's lungs, applied warm to the head, have carried off the phrenzy, by the exudation of the noxious of superfluous humour.

FEVERS attended with Eruptions, the chief of which, after the small-pox, measles, and plague, is the miliary fever, than which no fever puts on more various appearances. Pustules, rough to the touch, break out sooner or later all over the body; sometimes red, sometimes whitish, and again both sorts intermixed; at one time smaller, at another larger and more elevated, and of bad smell. Sobbing and anxiety about the heart are very frequent symptoms, which are often followed by a delirium and convulsions. The disease runs into a considerable length; and if it happen to end too soon, without a sufficiently perfect crisis, it often brings on a bad habit of body,

body. The red pimples are not so dangerous as the whitish ; and the more lively their colour, the safer they are. Hence it appears, that this fever is more owing to a defect in the humours, and the animal spirits in particular than to any bad quality of the air ; and that it requires different methods of cure, according to its different circumstances.

But of what kind soever the pustules are, blood is to be drawn in the beginning, if the patient hath strength to bear it ; unless he be actually in a sweat, in which case blood-letting is either to be omitted, or at least to be put off for a day or two, or to some other convenient time.

Now red pustules bear bleeding much better than the whitish : and though in both sorts blisters are serviceable, yet they are more necessary in the latter ; and they are to be applied to the neck, head, and all the limbs, at proper distances of time. After all, I would advise the physician always to bear in mind, that the more sparingly blood has been drawn, the more happily the disease generally terminates : for when the strength has been exhausted by evacuations towards the latter end, the eruption sinks in, and the patient dies.

Nature's endeavours to expel the morbid matter through the skin, are to be assisted by moderately cordial medicines. Of this tribe, the most proper are the bezoardic powder, the compound powder of contrayerva, and the cordial confection ; adding nitre in case of an inflammation : and this salt may be very advantageously joined to cordial medicines in almost all malignant fevers, at least in the beginning. Toward the decline, warm bathing is sometimes serviceable, in order to bring forth the remains of the pustules.

But if, either at the height, or on the decline of the fever, the only appearance of an eruption is a vast number of pellucid vesicles, so small as hardly to be seen ; it is not safe to persist too long in the use of internal medicines of this tribe, unless the length of the distemper has so far weakened the patient, as to render even more powerful cordials necessary : for such little roughnesses of the skin are not able to bring on a good crisis, but on the contrary, generally denote a difficult and tedious illness ; wherefore, without discontinuing the blisters, the cause of the disease is to be carried off by other ways, especially through the intestinal canal by gentle purges of rhubarb, or manna and Glauber's salts.

It is to be observed, that this disease is not always terminated by any one sort of crisis. It has sometimes one sort, sometimes another ; and, in some cases, several sorts together, as frequently happens in other malignant fevers. Thus, at the same time that there are other discharges of the morbid matter, a thrush sometimes breaks out, and spreads all over the mouth and throat. This commonly begins with an hiccup : and if it be whitish and very moist, and occasion a plentiful spitting, it is so far from portending any great danger, that it is a sign of the distemper's ending happily ; but if it be of a black kind and dry, and the spittle rough, and little in quantity, it is a fatal omen, as it indicates the mouth and throat choaked up with slimy phlegm. In these cases it is proper to use gargles made of barley-water and syrup of mulberries, or some such other syrup, or the pectoral decoction ; for repellents of all kinds are to be carefully avoided.

It may possibly seem strange to some, that Sydenham prescribed the bark in this fever, and the aphthæ attending it, who says, he always found it to answer his expectations. But this was not a rash practice in that sagacious physician ; for this fever often intermits when the aphthæ do not appear ; but it more frequently ends upon their going off. In both cases this excellent antidote is of very great service. Sydenham was the first, among us, who described this fever, which, he says, took its rise here in the month of February, 1684, after the long and severe frost of the preceding winter. Hence it is probable, that it arose from the acrimony of the humours, induced by the constriction, of the fibres of the skin from cold, and the consequent diminution of perspiration.

The Petechial FEVER. The petechiæ, from which this fever has its name, are broad red spots, like the bites of fleas, not rising above the surface of the skin. When they are lived or black, they are of very dangerous prognostic ; because they are really so many little gangrenes ; and therefore, the more numerous they are, the more their consequence is to be dreaded.

The common practice of giving hot medicines in the beginning of this distemper, in order to raise sweats, is quite wrong. It is much the safer way, to check the gangrenous dispositions of the humours by the bezoardic powder, or rather the compound powder of contrayerva, with nitre, as is before-mentioned ; or to assist

assist nature with the cordial confection dissolved in simple alexeterial water : and also to accidulate the patient's drink with dulcified spirit of nitre ; to repair his strength with Rhenish wine ; and, in fine, a very proper drink will be barley-water with juice of lemons : and all these liquors are to be drank plentifully. It will likewise be of use sometimes to administer some doses of the calx of antimony and bezoardic powder mixed, in order to provoke sweat ; but the calx should not be too much washed ; yet it is necessary to admonish, that it is not an uncommon case, especially towards the latter end of the disease, that the patient's weak low state requires warmer cordials ; such as Virginia snake-root, contrayerva-root, the root of wild valerian, saffron and the like : and infusions of these in water will be far more convenient than any other powders, especially if they be mixed with a small quantity of distilled vinegar.

Intermitting FEVER.---That this is not carried off by the Peruvian bark with a proper degree of certainty, without promising a vomit or a purge, or both, is not unknown to physicians ; but to join some mild cathartic to this remedy will perhaps appear new in practice : for it is commonly thought among us, that this medicine has little or no effect, unless the patient be costive while he takes it : but long experience has taught me, that it is quite necessary to add a small quantity of rhubarb to this febrifuge, so as to procure two stools at least every day : nor have I ever observed that this procedure has lessened its virtue, but rather rendered it more efficacious ; for although strong irritating cathartics raise such disturbances in the blood and humours, as make the proper medicines ineffectual : yet moderate purging is attended with this good effect, that the stomach better digests whatever is taken in, whether medicines or food : whereby their finest and most wholesome parts pass into the mass of blood.

The occasion of my contriving this method of giving the bark was this : about five and thirty years ago intermittent fevers, of a worse sort than ordinary, were very rife, and frequently terminated in a bad habit of body, and even in a dropy ; which consequences, when I had maturely considered them, I thought that this method might probably guard against ; nor was I deceived in my opinion : and the success, with which it was attended

encouraged me to pursue it, whenever this disease attacked bodies loaded with gross humours : but I was well aware of the danger of purging too much for after having given a drachm or two of rhubarb in this manner, it was my usual custom to omit the purgative, and continue the use of the febrifuge alone : and besides the advantages already recited, I made this observation, that when the disease is carried off by this method, there is always less danger of a relapse.

Now, with regard to this noble medicine, I have this one admonition to give, that it is not proper in any other fevers but those of the intermittent kind : for in continuals it is so far from being of service, that it does much mischief ; and it is also pernicious in those hectic which are accompanied with ulcers of any kind of the internal parts ; though they often have periodical returns, and much resemble quotidian or tertian intermittents : whence it may not perhaps appear an improbable conjecture, that this medicine operates on the bile alone, for that the bile has a considerable share in causing intermitting fevers, I have not the least doubt.

However, it sometimes happens that this febrifuge fails in true intermittents ; which failure is generally owing to a bad habit of body : wherefore the physician should use his best endeavours to discover in what part the fault lies ; and it will be commonly found to be in the viscera and glands of the abdomen : upon this account it will be necessary to prescribe some purges, and sometimes vomits ; and in the intermediate days deobstruents and stomachics, the best of which are aromatic bitters and preparations of steel : and for the same reason it is, that quartans are more difficult of cure than any other intermittents ; for in these the blood and humours are inert and excessively viscid ; so that there are two diseases to be conquered together, the bad habit of body and the fever ; which is generally done effectually, by joining Virginian snake-root and steel with the bark : however, it may not be improper to take notice, that in some cases where the bark did not answer, I have taken off intermitting fevers with a powder composed of chamomile flowers, myrrh, salt of wormwood, and a little alum.

But there is more danger attending that sort of intermitting fevers, by the Greeks named semiterian. This fever returns

F E V

every third day ; and of forty-eight hours the fit commonly takes up about thirty-six, more or less ; nor does the fever go off entirely, but only remits between the paroxysms. Hence Galen was right in saying, that it was compounded of a continual, quotidian, and an intermitting tertian.

Thus a particular regard is due to this disease, which seems to be caused by an inflammation of some internal parts, accompanied with obstructions from bilious humours and too viscid lymph : wherefore blood is to be drawn once or oftener, according to the patient's strength ; and gentle purgatives, such as the diuretic salt, manna with Glauber's salt, and the like, or to be ordered and repeated at proper distances of time ; nor ought we to be hasty in giving the bark, for fear it should increase the inflammation by adding to the obstruction of the viscera, and bring on an hectic. It will be much safer, first, to order the saline draughts, with juice of lemons, salt of wormwood, and simple cinnamon water, to be taken frequently.

Epidemic FEVERS.—These are caused by some fault in our ambient air ; and that is chiefly owing to the excess of heat, cold, drought, or moisture, or to the unseasonable vicissitudes of these qualities.

In Greece and Asia, where the seasons are generally uniform, and the winds pretty regular from certain but different quarters in the different months of the year, it was easy for men of sagacity to observe the changes of the weather, with their good and bad effects : and on a long use of this method of observation was built the art of prognostic in diseases, wherein Hippocrates, the father of physic, first excelled.

But in our climates, such is the inconsistency of the weather, and so many are the causes that raise different and even contrary winds on a sudden, that it seems impossible to erect any solid superstructure on that foundation : and accordingly Sydenham, who in imitation of Hippocrates, attempted to describe the fevers of each respective year, and to account for their differences from the differences of the weather and seasons, found at length, " That he made no progress in discovering the causes of epidemical diseases by observing the manifest qualities of the air ; as having remarked, that in different years, which agreed perfectly well in the visible temperature of the air, the reigning diseases were very different, and so

F E V

on the contrary ; and likewise, that there are various constitutions of years, which depend not on heat, cold, drought, or moisture, but on some occult and inexplicable alteration in the very bowels of the earth."

Now this matter, in my opinion at least, stands thus : That the manifest qualities of the air have a considerable share in producing epidemic diseases, is a point that admits of no doubt ; but there are other conjunct causes which alter the force of those qualities, either by increasing or diminishing them. These chiefly spring from the earth, as Lucretius wisely said :

—ubi putorem humida nocte est,
Intempestivis pluviusque et solibus ista.

When she's grown putrid by the rains,
and sweats

Such noxious vapours, press'd by scorching
heats.

Now as this terrestrial putridity is chiefly occasioned by rotted vegetables, and sometimes also by dead bodies of animals, and by minerals ; so the waters, especially of lakes and morasses, which have their plants and animals, in the same manner frequently exhale pestilential vapours which infect the circumambient air. In this class may be ranged, though rarely happening in our climates, inundations, earthquakes, eruptions from mountains, and all other remarkable and uncommon phenomena of nature, which are capable of filling the air we breathe with particles offensive to animal life : for these affect our bodies, and prepare them for the easy reception of diseases.

Slow or hectic FEVERS.—These are owing to so many different causes, that they may well seem not to be the same, but different diseases. Of all this tribe, the most pernicious are those which arise from an ulcer in any principal part of the body, the lungs especially, by the purulent matter mixing with the blood, and disturbing its natural motion.

Now it is to be observed, that the persons most liable to these exulcerations of the lungs, are such as have been afflicted with serophulous disorders in their infancy or youth. To which purpose the experienced Dr. Radcliffe was wont to say, that pulmonary consumptions in this and the colder countries are generally serophulous : and, indeed, in the dissection of bodies dead of consumptions, we very often find the lungs beset with tubercles or indurated glands, which had suppured and thrown off purulent matter.

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Medical writers have accurately described the various stages of this disease, as they succeed each other; but they have not taken sufficient notice, that some of its first causes have their periods or returns: and yet it is of great consequence to observe and prevent these periodical returns, as much as possible. Thus we see several persons at certain or stated times seized with a spitting of blood, or a defluxion of thin serosities on the lungs, and sometimes with bilious vomitings. In all these cases the bark is of service, if joined with pectorals, and given before the expected return of the disorder; which rule holds equally good in other hæmorrhages; but when the lungs are actually ulcerated, this same medicine is very prejudicial.

In ulcers of the lungs physicians particularly recommend a milk course, as having the double advantage of being food and physic: but this practice is liable to some caution, because some people have a natural aversion to milk. Moreover, in head-achs, acute fevers, and excessive thirst occasioned by them, and likewise in flatulencies, in bilious loosenesses, and very bloody stools, milk ought always to be deemed a poison. Now we generally give the preference to asses milk, though less nutritive; because it is more cooling and detergent; but when it cannot be conveniently had, whey made of cows milk, or even of goats milk, may be substituted in its room, especially if the goats have been fed on fragrant herbs: but cows milk itself, although diluted as usual with barley-water, is very frequently inconvenient, and the whey may be rendered more suitable to the disease by infusing stomachic and carminative herbs in it: but it happens unluckily sometimes, that when milk is extremely necessary for the body, such is the laxity of the intestines that they cannot bear it. In this case the milk may be medicated in this manner: take of red roses dried, of balauſtines, pomegranate rind, and cinnamon, each one drachm; boil them in a pint of cow's milk: when the decoction begins to boil, pour a little cold water in it, to make it subſide; repeat this process several times, till you have used a pint of water, and till the milk and water together are reduced to a pint; then strain off the liquor, sweeten it with sugar, and divide it into convenient draughts, so that the patient may take the whole quantity every day. This diet will answer the double intention of affording nourishment and restraining

the looseness, without putting the least obstacle to the use of food or medicines.

Now it is of the utmost consequence to attempt the cure of this dreadful disease early; and as it arises from the inflammation, it requires not only one, but several bleedings. If the blood be thick and black, or ſizy, it is called bad blood, and is thought to indicate farther bleeding; but if it be red and florid, it is esteemed good, and the lancet is no more used: but this notion is apt to lead into mistakes; for it is not uncommon to see blood drawn, when in the highest effervescence, extremely florid, and at the same time thick and ſizy: in which case bleeding ought to be repeated till its redness and ſiziness are diminished; which may be done without danger. It will possibly be thought a rash practice to draw blood, even when the patient is much wasted in his flesh and very weak: but it is better to try a doubtful remedy than none; and a temporary lessening of the strength is of service, when attended with a removal of part of the cause, which would weaken the body more and more every day: wherefore, if the lungs be ulcerated, and the fever run high, it will be proper to take away as much blood as the patient can bear, at proper intervals, so as to allow the body time to recruit. I have seen cases judged almost desperate, when this method of practice succeeded well; but if it happen otherwise, the physician is not to be branded with the death of the patient, whose viscera were so corrupted that it was impossible to save him.

Fumigations with balsamics, such as frankincense, storax, amber or benzoin, in order to correct and sweeten the acrid and salt humours, are of vast service in some cases; which is to be done by throwing the ingredients on red-hot coals, and receiving the fumes through a proper tube directly into the wind-pipe and lungs. This method of administering balsamics is almost entirely neglected, as useless: but whosoever considers the length of the way, which they must make by the blood vessels, before they reach the lungs; and what a small part of them comes to the place of their destination, will easily see, that this is the best way of communicating their virtue, if they have any.

For the same reason I have known the smoke of the balsam of Tolu, sucked into lungs through a proper tube, as we smoke tobacco, to be of signal benefit, especially in spitting of blood.

F E V

To these little suppurations it may not be improper to subjoin a larger abscess, which is sometimes formed in the same part, and is named vomica.—This disease, though bad in itself, and though it often terminates in a consumption, yet it is not attended with so much danger as those lesser exulcerations; for I have seen cases, wherein the patients in a fit of coughing threw up a pint or two of purulent matter, mixed with blood, of such an excessive stench, that people could not bear the room; and yet they were perfectly cured by a milk diet and balsamics, with anodynes at proper intervals.

There are two other species of consumption, which waste a person different ways. In one the body is not nourished; and as some particles are always naturally flying off, and nothing coming to supply their place, an excessive wasting of flesh ensues, which is called an atrophy. This is very frequently owing to a defect in the nervous fluid; and is either accompanied with a cachexy, which is the other species, or gradually brings it on. In both species the food is corrupted by reason of the bad habit of body, and the parts are not recruited; and therefore a well regulated course of living, and steel medicines to strengthen the stomach, with laxatives at proper intervals, are particularly indicated.

Lastly, in all decays, exercise and frictions, according to the patient's strength, ought to be constantly used; change of air is generally of service, and sometimes a long sea-voyage. Patients labouring under disorders of the lungs, in this country, are very justly sent to Lisbon or Naples: but riding on horseback, if practicable, if not, in a coach, or litter at least, or some other way of moving the body, is always proper. *Mead's Monita et Præcepta.*

Bilious or Choleric FEVER, a species of acute fever, owing its origin to distempers of the bile.

The general signs of the bilious or choleric fever, are a remarkable anxiety, and frequent complaints about the breast, as of a straitness and painful heat. A violent heat on the inside of the mouth, an insatiable and intolerable thirst, trembling and convulsive motions of the joints, and violent deliriums. Dryness of the mouth and tongue are often so terrible in this disease, that the skin cracks with it; and often the whites of the eyes, sometimes the whole body, becomes yellowish. The

F E V

peculiar and appropriated symptoms of a choleric febris, strictly so called, are a universal languor and debility of the limbs.

A severe shivering first seizes the patient, and is soon succeeded by a very violent heat, and raging pain in the head; and, after the two first days, there usually are very terrible strainings and reachings to vomit. The matter brought up at these times is caustic, acrid, and bilious, and inflames and even ulcerates the fauces; and, if voided upon a stone floor, effervesces violently. If this vomiting abates, there immediately comes on a diarrhoea attended with a tenesmus, occasioned by the irritation of this sharp matter in the rectum. Faintings also are very frequent in this disease, especially where the vomitings do not bring up a sufficient quantity of the offending matter. The peculiar and appropriated signs of the causus, strictly so called, are these: a violent and insatiable thirst, greater than that in any other fever. The bowels are always bound, and it is but very seldom that there is any tendency to vomit. The urine is reddish and turbid, and, after standing some time, deposits a red sediment. Often there is a sensible pain and soreness in the præcordia, so that the patient cannot bear the least touch upon the breast; and usually, in the course of the disease, there are faintings and violent convulsions.

Persons most subject to this disease are such as eat largely, and drink heavy and imperfectly fermented liquors after it. The choleric febris, properly so called, is most frequent with those of a cholericofanguineous habit, and such as feed on high-seasoned meats, and drink abundance of wine and other strong liquors; and is often brought on such persons by their falling into violent passions after a full meal. The causus peculiarly attacks the people of melancholic habits, who are much inclined to passion, but suppress it, and who are naturally costive.

Method of cure.—The cure of these diseases consists in the mitigating the violent sharpness of the humour, and promoting its evacuation; and, finally, in abating the burning heat brought on by it. The utmost endeavours are first to be made to correct and alter the morbid matter. To this purpose the several preparations of nitre, with the testaceous powders and mucilaginous ptisans, with small mixtures of lemon-juice, and frequent draughts of cooling and diluting liquors, are to be given moderately warm. If the costiveness

F I A

ness be too violent, clysters of broth must be injected, with the addition of a little oil and salt; and, if necessary, small doses of rhubarb. To quell the febrile heat and emotion of the blood, the mixtura simplex may be given with great success; and there is often a sensible good effect from the application of rags, wetted in camphorated spirits of wine, to the pit of the stomach. After the morbid matter is evacuated, the reachings to vomit may be allayed by gentle opiates. All hot medicines change the bilious fevers into inflammatory ones, and the common sudorifics drive the morbid matter into the blood, and usually bring on almost immediate discolourings of the skin like those of the jaundice. Bleeding, though performed ever so early in the disease, seldom does any good, except only in remarkable plethoric habits. *Junker's Consp. Med.*

Colliquative FEVER is that in which the body is much emaciated and consumed in a short space of time: the solid parts and the fat itself waste, sometimes by a diarrhoea, sometimes by sweat, by urine, or by feverish heats alone, without any sensible discharge. A colliquative fever is observed to accompany a cancer of the breast, with a diarrhoea. See the articles *Diarrhoea, Diabetes, Cancer, &c.*

For this disease, emulsions of almonds, and of the four cold seeds, as also asses, goats, or woman's milk are proper; or cow's milk with the juice of water-cresses; chicken broth, broth made of river crabs, or wood snails bruised.

FEVERFEW, in botany, a plant which is biennial, or of longer duration; grows wild in hedges and uncultivated places, and flowers in June. The leaves and flowers of feverfew have a strong, not agreeable smell, and a moderately bitter taste; both which they communicate, by warm infusion, to water and to rectified spirit. This herb is recommended as a warm, aperient, carminative bitter: supposed to be particularly serviceable in female disorders, and to be a medicine of no inconsiderable virtue, in some degree similar to a chamomile.

FIAT, in law, a short order or warrant signed by a judge, for making out and allowing certain processes.

FIAT JUSTICIA, is where the king, on a petition to him for his warrant to bring a writ of error in parliament, writes on the top of it *fiat justitia*, "let justice be done;" upon which the writ of error is made out.

F I E

FIBRE, in anatomy, a perfectly simple body, or at least as simple as any thing in the human structure; being fine and slender like a thread, and serving to form other parts: hence some fibres are hard, as the bony ones, and others soft, as those destined for the formation of all the other parts. The fibres are divided also, according to their situation, into such as are straight, oblique, transverse, annular, and spiral; being found arranged in all these directions, in different parts of the body.

FIBRE is also used to denote the slender filaments which compose other bodies, whether animal, vegetable, or mineral; but more especially the capillary roots of plants.

FIBULA, in anatomy, the outer and smaller bone of the leg, called also perone.

FIDE JUSSOR, among civilians, the same with a surety. See *Surety*.

FIELD, *Campus*, in agriculture, a piece of ground inclosed, whether for tillage or pasture.

FIELD, in heraldry, is the whole surface of the shield, or the continent, so called because it containeth those achievements anciently acquired in the field of battle. It is the ground on which the colours, bearings, metals, furs, charges, &c. are represented. Among the modern heralds, field is less frequently used in blazoning than shield or escutcheon.

FIELD BOOK, in surveying, that wherein the angles, stations, distances, &c. are set down.

FIELD-COLOURS, in war, small flags of about a foot and a half square, which are carried with the quarter-master general, for marking out the ground for the squadrons and battalions.

FIELD-FARE, in ornithology, the English name of the variegated turdus, with a hoary head. It is larger than the common black bird, and with us is a bird of passage, coming over in great numbers in winter.

* FIELDING (HENRY) an admirable comic writer, was born at Sharpham Park, near Glastonbury in Somersetshire, the 22d of April, 1707. His father, Edmund Fielding, served under the duke of Malborough, and arrived to the rank of lieutenant-general, and his mother was the daughter of Judge Gould. Our author received the first rudiments of his education at home, under the care of the reverend Mr. Oliver, and from his care he was removed to Eton school, where he became acquainted with lord Lyttelton, Mr.

Mr. Fox, Mr. Pitt, Sir Charles Hanbury Williams, &c. and having attained a considerable knowledge in the classics, he was sent to the university of Leyden, where he studied the civil law about two years, and then his remittances failing, he returned to London, when, though under age, he found himself his own master. From this source flowed all the inconveniencies that attended him through the remainder of his life. The vivacity of his humour, and his high relish of social enjoyment brought him into request with the men of taste and literature, and with the voluptuous of all ranks, and this introduced an extravagance which his finances could not support. His father indeed allowed him two hundred a-year; but as he had married again soon after the death of our author's mother, and had a large increasing family, it was but ill paid. But in whatever difficulties Mr. Henry Fielding might be involved, his imagination was fond of seizing every gay prospect, and in his worst adversities filled him with sanguine hopes of a better fortune. To obtain this he flattered himself with finding resources in his wit and invention, and accordingly, in 1727, when about twenty years of age, commenced a writer for the stage, and before he was quite thirty, he had produced about eighteen theatrical performances. Among these, the comedy of the Miser, which he has mostly translated from Moliere, has maintained its ground upon the stage ever since its first performance, and has the merit of a fine copy from a great painter. Almost all his farces were very successful, and many of them are still acted with approbation. They were generally the production of two or three mornings; when he had contracted to bring on a play or a farce, he would go home late from a tavern, and the next morning deliver a scene to the players, written on the paper that had inclosed the tobacco, in which he much delighted, and which he chewed immoderately. Mr. Fielding had not been long a writer for the stage when he married Miss Craddock, a beauty from Salisbury; and his mother dying about that time, a small estate at Stower, in Dorsetshire devolved to him. Thither he retired with his wife, of whom he was extremely fond, with the resolution to bid adieu to all the follies and intemperance of a town-life. But unhappily a kind of family pride gained an ascendant over him, and he immediately began to vie in splendor

with the neighbouring 'squires. Hospitality threw open his doors, and in less than three years, his entertainments, hounds, horses, and servants devoured a little patrimony, which, if managed with economy, might have blest him with a state of independence during the rest of his life. Mr. Fielding, sensible of the disagreeable situation to which he was now reduced, and being then about thirty years of age, took chambers in the Temple, where he applied himself to the study of the law with the most intense application. After the customary time of probation, he was called to the bar, and as long as his health permitted, attended with assiduity both in term-time, and on the western circuit; but the gout soon rendering it impossible for him to be as constant at the bar as his profession required, he could only follow the law in his intervals from pain, yet he still pursued his researches with an eagerness peculiar to himself: amidst the exigencies of distress, with a wife and family, he was obliged, for an immediate supply, to produce almost extempore, a play, a farce, a pamphlet, or an essay for a new's paper. At length his genius broke forth with an effulgence superior to all the rays of light it had before emitted, in his *Joseph Andrews*. Soon after, his *Wedding Day* was exhibited on the stage with indifferent success. His ill state of health, and his necessities, now made him grow cool to the study of the law: besides, to complete his distress, his wife, whom he tenderly loved, languished, and daily wore away before his eyes, and at length her death brought on such a vehemence of grief that his friends were apprehensive of his losing his reason. The first emotions of his sorrow being at length abated, he successively engaged in two periodical papers, the *True Patriot*, and the *Jacobite Journal*. He had now attained the age of forty-three, when the repeated attacks of the gout rendered him incapable of pursuing the business of a barrister any longer: but he had the happiness to obtain the office of an acting magistrate in the commission of the peace for Middlesex, with a yearly pension out of the public service-money. After this he published his admired piece, called *Tom Jones*, which was followed in about four years by his *Amelia*, in which there are evident marks of his genius beginning to decline. He next wrote a periodical paper, intitled, *The Covent-Garden Journal*: at length, by the advice of his physicians, he set

F I G

out for Lisbon, and died in that city in the year 1754, and the forty-eighth of his age.

FIELD-OFFICERS, in the art of war. See *Officer*.

FIELD-PIECES, small cannons, from three to twelve pounders, carried along with an army in the field. See *Cannon*.

FIERI FACIAS, in law, a writ that lies where a person has recovered judgment for debt or damages in the king's courts against one, by which the sheriff is commanded to levy the debt and damages on the defendant's goods and chattels.

FIFE, in music, is a sort of wind-instrument, being a small pipe, now much used in the army.

FIFTH, in music, the same with diapente. See *Diapente*.

FIG-TREE, *Ficus*, in botany, a genus of plants, producing male and female flowers separate, neither of which have any flower leaves: the stamina are three setaceous filaments of the length of the cup; and the fruit is large, fleshy, and of a turbinated figure; being properly nothing more than the common calyx, or cup, of the fructification.

Method of cultivating FIG-TREES.

These trees are always planted as standards, in all warm countries; but in England they are generally planted against walls, there being but few standard fig-trees, at present, in the English gardens: however, since the fruit is found to ripen well on standards, and the crop of figs is often greater upon them, than upon those trees against walls, it may in time become the general practice to plant them either in standards or espaliers; the latter, I think, will succeed best in England, if they are managed as in Germany; where they untie the fig-trees from the espalier, and lay them down, covering them from the frost with straw or litter, which prevents their shoots being injured by the frost; and this covering is taken away gradually in the spring, and not wholly removed until all the danger of frost is over; by which management they generally have a very great crop of figs; whereas, in England, where the trees grow against warm walls, if the spring proves warm, the young figs are pushed out early; and the cold, which frequently returns in April and May, causes the greatest part of the fruit to drop off, so that our crop of figs is generally more uncertain than most other sorts of fruit; and it frequently happens, that trees which are planted

F I G

against north and east aspected walls, produce a greater quantity of fruit in England, than those which are planted against south and south-east aspects, which must happen from the latter putting out their fruit so much earlier in the spring than the former: and, if there happen cold frosty nights, after the figs are come out, which is frequently the case in this country, the forwardest of the figs are generally so injured as to drop off from the trees soon after. In Italy, and the other warm countries, this first crop of figs is little regarded, being few in number; for it is the second crop of figs which are produced from the shoots of the same year, which is their principal crop, but these rarely ripen in England; nor are there above three or four sorts which ever ripen their second crop, let the summer prove ever so good; therefore it is the first crop which we must attend to in England: so that when these trees are growing against the best aspected walls, it will be a good method to loosen them from the wall in the autumn; and, after having divested the branches of all the latter fruit, to lay the branches down from the wall, fastening them together in small bundles, so that they may be tied to stakes, to keep them from lying upon the ground; the damp whereof, when covered in frosty weather, might cause them to grow mouldy; and hereby they will be secured from being broken by the wind. When they are thus managed in the autumn, if the winter should prove very severe, the branches may be easily covered with peas-haulm, straw, or any other light covering, which will guard the tender fruit-bearing branches from the injury of the frost: and when the weather is mild the covering must be removed, otherwise the figs will come out too early; for the intention of this management is to keep them as backward as possible: then in the spring, when the figs are beginning to push out, the trees may be fastened up to the wall again. By this management I have seen very good crops of figs produced in two or three places.

I have also seen great crops of figs in some particular gardens, after very sharp winters, when they have, in general, failed in other places, by covering up the trees with reeds made into panels, and fixed up against the walls.

In the pruning of fig-trees, the branches must never be shortened; because the fruit are all produced at the upper part of the

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F I G

the shoots; so, if these are cut off, there can be no fruit expected; besides, the branches are very apt to die after the knife; so that, when the branches are too close together, the best way is to cut off all the naked branches quite to the bottom, leaving those which are best furnished with lateral branches at a proper distance from each other, which should not be nearer than a foot; and when they are well furnished with lateral branches, if they are laid four or five inches farther asunder, it will be better.

The best season for pruning of fig-trees is in autumn, because, at that time, the branches are not so full of sap; so they will not bleed so much as when they are pruned in the spring; and, at this season, the branches should be divested of all the autumnal figs; and the sooner this is done, when the leaves begin to fall off, the better will the young roots resist the cold of the winter. There are some seasons so cold and moist that the young shoots of the fig-trees will not harden, but are soft and full of juice: when this happens, there is little hopes of a crop of figs the succeeding year; for the first frost in the autumn will kill the upper part of these shoots for a considerable length downwards: whenever this happens, it is the best way to cut off all the decayed part of the shoots, which will prevent the infection from destroying all the lower part of the branches; and by this method I have seen a moderate crop of figs put out from the lower part of the shoots, where, if the shoots had not been injured, there would have been no fruit produced; because it is chiefly from the four or five uppermost joints of the shoots that the fruit comes out: and it is for this reason, that as many of the short lateral branches should be preserved as possible, they being those most productive of fruit; for, where the long straight shoots are fastened up, there will be no fruit, but at their extremities: so that all the lower part of the trees will be naked, if there be not a particular regard had to supply young shoots in every part of the trees. *Miller's Gard. Dict.*

Figs, both fresh and dry, are very wholesome food; they are nutritive and emollient; they are also good in disorders of the breast and lungs; but a too free use of them has sometimes brought on obstructions of the viscera, a common complaint in the Levant. They are frequently made ingredients in our pectoral decoctions, and by some are greatly recommended against nephritic complaints.

F I L

They are much used externally by way of cataplasm, either roasted or boiled in milk, for the ripening of tumours, and for easing the pain of the piles.

FIG, in farriery, a sort of wart on the frush, and sometimes all over the body of a horse. The figs that appear on the frush or sole make an evacuation of malignant stinking humours, that are very hard to cure.

FIGURAL, FIGURATE, or FIGURATIVE, a term applied to whatever is expressed by obscure resemblances. The word is chiefly applied to the types and mysteries of the Mosaic law; as also to any expression which is not taken in its primary and literal sense.

FIGURAL, or FIGURATIVE NUMBERS, such as do or may represent some geometrical figure in relation to which they are always considered, as triangular numbers, pentagonal numbers, pyramidal numbers, &c.

FIGURATIVE, among grammarians, the same with what is otherwise called characteristic.

FIGURATIVE COUNTERPOINT, in music, that wherein there is a mixture of discords along with the concords.

FIGURE, in philosophy, the surface or terminating extremities of any body.

FIGURES, in arithmetic, certain characters whereby we denote any number, which may be expressed by any combination of the nine digits, as 1, 2, 3, 4, 5, 6, 7, 8, 9, and 0.

FIGURE, in dancing, the several steps which the dancer makes in order and cadence, considered as they mark certain figures on the floor.

FIGURE, in geometry, the superficies included between one or more lines, of which there are three sorts, as rectilinear, curvilinear, and mixed figures; rectilinear have their extremities all right-lines, as triangles, quadrilaterals, &c. Curvilinear are such as have their extremities crooked, as circles, ellipses, &c. Mixed, are partly right-lines and partly crooked, as a semicircle, segment of a circle, &c.

FILAMENT, a small fine fibre or thread, which composes the texture of the flesh, nerves, skin, &c. of an animal: and it is likewise applied to the component parts of vegetables; as also the fibres belonging to their roots. It is also used to signify the viscid concreted matter, which appears like hairs or threads in urine.

FILAMENTS, among botanists, is particularly used for the stamina.

FILAZER, or FILACER, an officer of

F I L

of the Common Pleas, so called from his filing those writs whereon he makes out process.

FILBERT, or **FILBERD**, the fruit of the corylus, or hazel. This species of nuts is more nourishing than the common ones; but it is hard to digest. They are, however, worthy of being propagated in orchards and gardens; which is done by planting them in February.

FILE, among mechanics, a tool used by workmen in metal, &c. to smooth, polish, or cut.

FILE or **LABEL**, in heraldry, consists sometimes of more, and sometimes of fewer points: According to Guillim, it is borne as a charge in a coat of arms: but it is usually the difference or mark of distinction which the elder brother bears in his coat during his father's life-time. Some call the file the upper horizontal line, and the label the point that issues from it.

FILE, in the art of war, a row of soldiers, standing one behind another, which is the depth of a battalion, or squadron. The files of a battalion of foot are generally three deep; as are sometimes those of a squadron of horse. The files must be straight, and parallel one to another.

FILIGRANE, or **FILIGREE-WORK**, any piece of gold or silver work that is curiously done with grains or drops on the filaments or threads.

FILING, in smithery, the operation of fashioning metalline bodies by means of a file.

FILIPENDULA, dropwort, in botany. This plant contains a salt, approaching to that of alum: but it is mixed with a great deal of sulphur. All authors agree that it is very diuretic and aperitive; and is also recommended for the epilepsy and dysentery.

FILIX, in botany, an order of the cryptogamia class of plants, comprehending the fern, horse-tail, adder's-tongue, maiden-hair, spleenwort, polypody, &c.

FILLET, in heraldry, the fourth part of the ordinary called a chief, which is placed in the chief point of the escutcheon.

FILLET, in anatomy, the nervous ligament under the tongue, which midwives usually divide with their nail, or a sixpence, immediately after the child's birth: it is most commonly called the frenum.

FILLET, or **FILET**, in architecture, a little square member or moulding, used in divers places and on divers occasions: but generally as a crowning over a greater moulding. It is called *lista* or *listella* by

Vol. II.

F I N

the Italians; by the French, *reglet*; and by others *band* and *bandelette*.

FILLING *the Sails*, in the sea-language, the act of disposing a sail in such a manner, that the wind pressing into the cavity or belly of it shall force the ship forward, or a-head, in contradistinction to backing, which forces her a-stern; and shivering, which makes her remain almost in a state of rest, neither advancing nor retreating.

FILLY, a term among horse-dealers, to denote the female or mare colt. See *Foal*.

FILM, in botany, that woody skin which separates the seeds in the pods of plants.

FILTER, or **FILTRE**, in chemistry, a strainer, commonly made of bibulous or filtering paper, in the form of a funnel, through which any fluid is passed, in order to separate the gross particles from it, and render it limpid. This filter is put into a funnel, with the small end in the vessel for the reception of the filtrated liquor, and then the liquor is poured into the paper, not too much at once, for fear of bursting it. A filter is also made of a woollen bag, called Hippocrates's sleeve, or one of linen, according to the nature of the liquor to be filtered.

FILTRATION, in chemistry. See *Depuration*.

FIMBRIÆ, denotes appendages disposed by way of fringe round the border of any thing: such are those about the thicker extremities of the Fallopian tubes.

FIMBRIATED, in heraldry, an ordinary with a narrow border or hem of another tincture.

FIN, *Pinna*, in natural history, a well known part of fishes, consisting of a membrane supported by rays, or little bony or cartilaginous ossicles.

FINANCES, in the French polity, the revenues of the king and state.

FINE, in law, is used for a formal conveyance of lands or tenements, or of any thing inheritable, being *in esse temporis finis*; in order to cut off all controversies. Others define it to be a final agreement between persons, concerning any lands or rents, &c. of which any suit or writ is depending between them in any court.

FINE sometimes signifies a sum of money paid for entering lands or tenements let by lease; and sometimes a pecuniary mulct for an offence committed.

FINE *adnullando levato de tenemento quod fuit de antiquo dominico*, a writ to the justices for disannulling a fine levied of lands

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holden in ancient demesne to the prejudice of the lord.

FINE *capiendo pro terris, &c.* a writ lying for one that, upon conviction of a jury, having his lands and goods taken into the king's hands, and his body committed to prison, obtains favour for a sum of money, &c. to be remitted his imprisonment, and his lands and goods to be redelivered to him.

FINE *levando de tenementis tentis de rege in capite, &c.* a writ directed to the justices of the Common-Pleas, to licence them to admit of a fine for sale of lands holden in capite.

FINE *non capiendo pro pulchre placitando,* a writ to inhibit officers of courts to take fines for fair pleading.

FINE *pro redisseisina capienda, &c.* a writ that lies for the release of one laid in prison for a refeasin, upon a reasonable fine.

FINE *for Alienation,* a reasonable fine paid the king by his tenants in chief, for licence to alienate their lands.

FINERS *of Gold and Silver,* those who separate these metals from coarser ores. See *Refiners*.

FINERY, in the iron-works, one of the forges at which the iron is hammered and fashioned into what they call a bloom, or square bar. See *Iron*.

FINE-STILLER, in the distillery, that branch of the art which is employed on the distilling the spirit from treacle or other preparation or recrements of sugar, is called fine-distilling, by way of distinction from malt-distilling; and the person who exercises this part of the trade is called a fine-distiller.

FINING *of Wines.* See *Wine*.

FINITE, something bounded or limited, in contradistinction to infinite. See *Infinite*.

* **FINLAND** (the duchy of) is bounded on the west by the gulph of Bothnia, on the east by Muscovy, on the south by the gulph of Finland and Ingria, and on the north by Bothnia and Lapland. It is about two hundred miles in length, and almost as much in breadth. It contains many lakes, in which are several islands, which are generally rocks or inaccessible mountains. The inhabitants are small of stature, capable of enduring hardships, and good soldiers. The Russians have for some time rendered themselves masters of a good part of this province; the rest belongs to Sweden. It is divided into seven provinces; 1. Finland; 2. Cajana; 3. Thavasthia; 4. Nyeland; 5. Savolaxia;

F I R

6. Carelia; and, 7. Kexholmia. Finland Proper is an agreeable country, and lies over-against the city of Stockholm, near the place were the gulphs of Bothnia and Finland meet. It is divided into South and North Finland, and is diversified with mountains, forests, lakes, meadows, and pleasant fields.

FINNIKIN, the English name of a species of pigeon, remarkable for its wheeling round several times, whenever it courts the female.

FIRE; a general name, by which men seem to understand a certain sensation or complex notion of light, heat, burning, melting, &c.

The power of fire is so great, its effects so extensive, and the manner of its acting so wonderful, that some of the wisest nations of old revered and worshipped it, as the supreme deity. Now amongst all the wonderful properties of fire, there is none more extraordinary than this, that though it is the principal cause of almost all the sensible effects that continually fall under our observation, yet it is itself of so infinitely a subtle nature, that it includes the most sagacious enquiries, nor ever comes within the cognizance of our senses; and hence others have been led to be of opinion, that it ought to be looked upon as spirit rather than body.

Fire is generally divided into three kinds or species, viz. celestial, subterraneous, and culinary. By celestial fire is principally understood that of the sun, without regard to that of the fixed stars, though this perhaps may be of the same nature. By subterraneous fire we understand that which manifests itself in fiery eruptions of the earth, volcanoes, or burning mountains; or by any other effects it produces in mines, or the more central parts of the earth. By culinary fire we mean that employed in all chemical operations, and the common occasions of life. The sun's heat appears to be the actuating principle, or general instrument of all the operations in the animal, vegetable, atmospherical, marine, and mineral kingdoms.

Fire, considered in itself, seems to exist in the greatest purity and perfection in the celestial regions; at least we are insensible of any considerable smoke it yields: for the rays of light come to us from the sun, unmixed with any of that gross, feculent, or terrestrial matter, found in culinary and subterranean fires; but allowing for this difference, the effects of the solar fire appear the same as those of culinary fire.

If we examine the effects of subterraneous fires, we shall find them the same with those produced by culinary fire. Thus burnt coals, cinders, and melted minerals, are thrown up by Vesuvius and other burning mountains. Warm nephritical exhalations, natural hot springs, steams, vapours, smoke, &c. are found in several parts of the globe, rising nearly in the same manner as if they were produced by the heat of a furnace. Whence it appears that subterraneous fires are of the same nature with the culinary.

Fire differs from heat only in this, that heat is a motion in the particles of a body, with a lesser degree of velocity; and fire a motion with a greater degree of velocity, viz. such as is sufficient to make the particles shine; though we often call such a state as will burn, fire, though it does not actually shine; and we seldom call those lucid bodies fires, which only shine, and do not burn. These are a sort of phosphori, which, though they have no heat, yet seem to owe their lucidity to the motion of their parts. See *Heat* and *Phosphorus*.

There seems to be no other difference between fire and flame, than this; that fire consists in a glowing degree of velocity in the parts of a body, while yet subsisting together in the mass; but flame is the same degree of velocity in the particles dissipated and flying off in vapour: or, to use Sir Isaac Newton's expression, flame is nothing else but a red hot vapour. See *Flame*.

FIRE, in chemistry, the great instrument by which most of the operations in that art are performed.

The kind, degree, direction, &c. of fire, are things the chemist is principally to attend to. There are, in chemistry, as many kinds of fires as there are mediums through which it may be conveyed, or fuels that afford it. For common use, fire is conveyed through ashes, sand, water, &c. or directly through the containing vessel. Hence, fires are denominated of various kinds, as those of sand, filings of iron, and ashes, the reverberatory fire, the ignis rotæ, or fire for fusion, the lamp fire, the balneum Mariæ, the vapour bath, and the fire of suppression. The chemists use also several other kinds of heats, which may be classed among the fires, such as insolation, a bath of horse-dung, a bath of the skins of grapes, and the heat of quick-lime.

The purest fire is that of alcohol, or perfectly pure spirit of wine; the next in purity is that of distilled oils; the next,

that of charcoal, or charred turf; and the impurest pit-coal; but all these have nearly the same effect, when received through the same kind of medium. The degrees of heat or fire according to Boerhaave, are as follow.

The first degree of fire is that by which nature performs the office of vegetation in plants, and whereby chemistry imitates or does the like: this commences from the highest degree of cold, which, in Fahrenheit's thermometer, is denoted by one, and ends in eighty degrees; since in this whole interval we find certain plants give indications of life and growth. This heat is suited to extracting of the native spirits of odoriferous vegetables with oils, as that of roses, jessamin, &c. and again, to making the more curious insolutions, &c.

The second degree of fire may be accounted that of the human body, in a healthy state. This degree is always greater than that of the ambient air, and may be supposed to commence at the 40th degree of the thermometer, and end about the 94th. Within this compass animals may live and subsist, that is, if their juices be of any degree of heat within these bounds. This degree is adapted to vinous and acetous fermentation, putrefaction, exelusion of the chick, the finer digestions, the making of tinctures and elixirs; and the adepts have used it for the first digestion of their mercury, by carrying the including vessel constantly in their pocket.

The third degree of fire is that which extends from 94 degrees of the thermometer to 212, at which last water usually boils. This degree is required in the distillation of simple and compound waters, the essential oils of vegetables, and will coagulate or consolidate the serum, blood, and other animal juices, and consequently destroy the creatures.

The fourth degree may be taken from 211 to 600 of the thermometer, within which latitude quicksilver or oil of vitriol boils, distils, or becomes volatile. This degree is suited to the melting of lead, tin, bismuth, &c. and the subliming of sal armoniac and sulphur, the calcining of antimony, &c.

The fifth degree is that wherein the other metals melt, and which commences from 600 degrees of the thermometer, and ends where iron is held in a state of fusion. In this degree most bodies are destroyed; but glass, gold, silver, copper, and iron, remain long unchanged; all other fixed bodies grow red-hot in this

degree, and all the unvitriifiable stones are calcined.

The sixth and highest degree of fire, hitherto known, is that of the burning lens, or concave, by M. Villette, Tschirnhausen, Buffon, and others. The focus of these lenses will even volatilize what is called the metalline or mercurial part of gold, and vitrify the more terrestrial. See the article *Burning-Glass*.

The fires of sand, filings of iron, and ashes, have generally their degrees from the first to the third: the reverberatory fire has its degrees from the first to the fourth: the ignis rotæ serves for calcinations and fusions; and a vessel may receive different degrees of heat from a lighted lamp: the balneum Mariæ and balneum vaporis have also their degrees, as has the fire of suppression its degrees: insolation has its degrees in proportion to the heat of the sun, to which the substances are exposed: the bath of horse's dung has its degrees, according to the bulk of the heap, or the place in which it is lodged: the bath of grape-skins has also its degrees like that of the bath of horse's-dung: and the heat of quick-lime has also its degrees; for according as we desire it more or less strong, we expose it to powder longer or shorter in the open air; and when we have occasion for all its heat, we use it as quick as we possibly can.

St. Anthony's FIRE, in medicine. See *Erysipelas*.

FIRE, in the art of war, a word of command to the soldiers, to discharge their muskets; to the cavalry, to discharge their carbines or pistols; to the grenadiers, to fire their grenades; and to the gunners, to fire the guns.

Running FIRE is when a rank of men, drawn up, fire one after another; or, when the lines of an army are drawn out to fire on account of a victory, each squadron or battalion takes it from another, from the right of the first line to the left, and from the left to the right of the second line.

FIRE-ARMS, all sorts of arms charged with powder and ball, as cannon, muskets, carbines, pistols, blunder-busses, &c. See *Cannon*, *Gun*, &c.

FIRE-BALL, in the art of war, a composition of meal-powder, sulphur, saltpetre, pitch, &c. about the bigness of an hand-grenade, coated over with flax, and primed with a slow composition of a fusee.

FIRE-LOCK. See *Gun*, *Musquet*, &c.

FIRE-MASTER, in our train of artillery, an officer who gives the directions

and proportions of ingredients for each composition required in fire-works, whether for the service of war, or for rejoicings and recreations.

His orders are given to the fire-workers and bombardiers, who must execute them.

FIRE-POTS, in the military art, small earthen pots, into which is put a charged grenade, and over that powder enough till the grenade is covered; then the pot is covered with a piece of parchment, and two pieces of match a-crois, lighted; this pot being thrown where it is designed, it breaks and fires the powder, and burns all that is near it, and likewise fires the powder in the grenade, which ought to have no fuse, to the end its operations may be the quicker.

FIRE-WORKERS, officers subordinate to the fire-master.

FIRE-BOTE, fuel or firing for necessary use, allowed to tenants, out of the lands granted to them.

FIRE-ENGINE. See *Engine*.

Wild-FIRE, a kind of artificial or factitious fire, which burns even under water, and that with greater violence than out of it. It is composed of sulphur, naphtha, pitch, gum, and bitumen; and is only extinguishable by vinegar mixed with sand and urine, or by covering it with raw hides. Its motion or tendency is said to be contrary to that of natural fire, and it always follows the direction in which it is thrown, whether it be downwards, side-ways, or otherwise.

* *FIRE of London*. It broke out near the Monument, September 2, 1666, and continued burning four days and nights. It burnt down 113,000 houses, the city gates, Guildhall, several stately edifices, St. Paul's, and eighty-five other churches, and four hundred streets. The ruins of the city extended from the Tower to the Temple church; and from the north-east-gate to Holborn-bridge, and Fleet-ditch.

FIRING-IRON, in farriery, an instrument not unlike the blade of a knife; which being made red-hot, is applied to a horse's hams, or other places standing in need of it, as in preternatural swellings, farcy-knots, &c. in order to discuss them. Sometimes this is done for wrenches and pasterns.

FIRKIN, an English measure of capacity, for things liquid, being the fourth part of the barrel. It contains eight gallons of ale, scope, or herrings; and nine gallons of beer.

FIRMAMENT, in the old astronomy, the eighth sphere or heaven, with regard

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to those of the seven planets, which it surrounds. More properly, the firmament is that space expanded above us in the heavens.

FIRMNESS, *Firmitas*, the consistence of a body, or that state wherein its sensible parts cohere in such a manner, that the motion of one part induces a motion of the rest.

FIRST-FRUITS, *Primitiæ*, among the Hebrews, were oblations of part of the fruit of the harvest, offered to God as an acknowledgement of his sovereign dominion.

FIRST-FRUITS, in the church of England, the profits of every spiritual benefice for the first year, according to the valuation thereof in the king's books.

FIR-TREE, *Abies*, in botany, a genus of ever-green trees, whose leaves are single, and for the most part produced on every side of the branches; the male flowers or catkins are placed at remote distances from the fruit in the same tree; the seeds are produced in cones, which are squamose.

The difference between these and the pines is, the latter having two or more leaves produced out of the sheath or cover.

These trees are all raised from seeds taken out of their polyspermous cones. The way to get out the seeds is, either by exposing the cones to a gentle fire, or by soaking them all night in water, which will cause their squamose cells to open, and readily emit their seeds. The former method is the best, provided they are not exposed to too great heat. But this ought not to be done until you are ready to sow them; which is best performed in the beginning of March.

These plants should be all raised in a nursery, where they may be protected from the birds; otherwise they will be in danger of being destroyed when they first come up: for as they bring up the husk of the seed on the top of the plant, the birds in picking off the husk will break off the plant, whereby a whole bed may be lost in a few hours, if they are not carefully guarded from them.

The best time of sowing these seeds is about the latter end of March, or beginning of April, on a bed of light earth, covering the seeds about half an inch deep with the same sort of earth. In this bed the plants should remain until the following spring, when there should be a number of beds prepared in the nursery to receive these seedling plants; and

F I S

the beginning of April they should be transplanted into the beds, at the distance of six inches row from row, and at three inches asunder in the rows. If the season should prove dry, it will be proper to water the plants every week once or twice, according to the warmth of the weather; and the beds should be covered with mats, to screen the plants from the sun, and drying winds, until they have taken good root; after which time they will require no further care, but to keep them clear from weeds. In these beds the plants may remain two years; at the end of which they should be transplanted into an open spot of ground; for their roots will in that time meet quite over the beds.

The distance which these plants should be placed in this nursery, should be four feet row from row, and two feet asunder in the rows.

When the plants are planted, if the season should prove dry, they should be watered, to settle the earth to their root; and if this is repeated three or four times, if the season should continue dry, it will greatly promote their taking new root, and secure them from the injuries of the drying winds. In this nursery the plants may remain two or three years, according to the growth they shall have made; and, during this time, the ground between the plants should be constantly kept clean from weeds, and dug between the rows every spring; in doing of which, care must be taken not to cut or injure the roots of the plants: this is all the culture they will require during their continuance in the nursery; and, when they are transplanted into the places where they are to remain, the necessary care to be taken is, in taking them up, not to injure or cut off their roots, and let them be as little time out of the ground as possible; and, when they are out, to guard their roots from the drying winds. The surest time for removing of these trees is about the beginning of April; though they may, and often are removed with success at Michaelmas, yet the spring is the more sure season, especially in moist land.

Most of the kinds of firs may be removed at the height of six or seven feet; but those of two feet high are much better, and will in a few years time get the better of those taller trees. *Miller's Gard. Diet.*

FISH, in natural history, an animal which lives in the water, that being its natural element.

Willoughby, after Aristotle, has accurately distinguished fishes into *cetaceous*, *cartilaginous*, and *spinous*.

The *cetaceous*, called also *belluæ marinæ*, have lungs, and breathe like quadrupeds; they copulate also like them, and conceive and bring forth their young alive, which they afterwards suckle with their milk.

The *cartilaginous* sort are those produced from eggs like large birds; which are also excluded the womb, like those of birds.

The *spinous* kind are also oviparous; but their eggs are smaller, and they have spinæ up and down in their flesh to strengthen them.

The same author is likewise of an opinion that it would be also proper to divide fishes into such as breathe with lungs, and such as breathe with gills; and then to subdivide those that breathe with gills into viviparous and oviparous.

Naturalists remark, that the structure of fishes, and their confirmation to the element they reside in, is very wonderful. Their bodies are cloathed and guarded in the best manner, with scales or shells, suitable to their respective circumstances, the danger they are exposed to, and the motion and business they are to perform. The center of gravity is placed in the properest part of the body for swimming; and their shape the best adapted to their making their way through the water, and most conformable to the rules of geometry. They have several parts peculiar to themselves; as fins to balance and keep them upright, and an air bladder to enable them to rise or sink at pleasure. They have gills, or branchiæ, whereby they respire, as animals do by their lungs. The tail is the instrument of progressive motion, and serves to row them forward. Their eyes are peculiarly formed to enable them to correspond with all the conveniences and divergencies of rays, which the variations of the watery medium, and refractions thereof, may occasion; in which respect they bear a near resemblance to birds.

FISH-PONDS, those made for the breeding or feeding of fish.

FISHERY, a place where a great number of fish are caught.

The principal fisheries for salmon, herring, mackrel, pilchards, &c. are along the coasts of England, Scotland, and Ireland; for cod, on the banks of Newfoundland; for whales, about Greenland; and for pearls, in the East and West-Indies.

FISHERY denotes also the commerce of fish, more particularly the catching them for sale.

FISSURE, *Fissura*, a chap or crack, in surgery, is either natural or morbid: thus, the mouth, &c. is frequently called a natural fissure: morbid fissures are either those of the cranium or other bones, or chaps of the skin, which sometimes happen about the lips, anus, or other parts of the body.

FISSURE, in philosophy, is frequently applied to those divisions that are to be met with between layers of different kinds of earth or stone.

FISTULA, in surgery, a deep, narrow, and callous ulcer, generally arising from abscesses or ulcers.

The word is Latin, and literally signifies a pipe; this disorder being so called from its resemblance to a pipe or reed.

The seat of a fistula is always in the *membrana adiposa*; nor have we any well vouched observations of fistulas penetrating what we properly call the substance of the muscles. But if we consider that pus, collected in the *membrana cellulosa*, and attenuated therein, may be lodged upon the muscles, it is obvious that this pus must, by the action of these muscles, be propelled through all the adjacent parts, and produce deep sinuses and fistulas of the worst kind, especially when it insinuates into the intestines of the muscles: the thicker, therefore, the *membrana adiposa* is, or the more strata of muscles that lie in the suppurated part, the more mischief the retained pus may do.

When there is an external aperture on the surface of the body, a sinus or a fistula may be easily discovered. Celsus informs us, that it is above all things highly expedient to introduce a probe into the fistula, to know its depth and its direction; whereby we may know whether it has penetrated to the bone or not; and whether the bone is carious or sound. But the best method of discovering them is with a syringe to inject tepid water, which will easily insinuate into all their windings.

But when sinuses are not yet opened, they are with greater difficulty discovered, especially when deep seated. All the light we can then receive is from the symptoms of the preceding inflammation, and the nature of the subsequent suppuration; besides that, no considerable suppuration can happen without being soon after accompanied with a slight hectic fever.

When fistulas, not yet become callous, are complicated with ulcers, and discovered either by the eye, the assistance of the probe, or any other means, the most expeditious method of relief is to make an incision,

incision to the very bottom, if it can be done without danger, after which they are to be deterged and consolidated. But, because patients are unwilling to subject themselves to this operation, it is expedient previously to cleanse them by some proper injection, or by means of lint covered with some digestive ointment. As the hardness of tents thrust into fistulas, or perhaps their too great length, may produce a callous, or inflammation, or excite a commotion of the humours, or at least protract the cure, I do not think the use of tents safe: Belloste and Cæsar Magatus, both skilful surgeons, having, on this account, entirely rejected them; only in cases where the conglutination of the mouth of narrow fistulas is to be prevented; and even then they ought to be very short and soft. Belloste absolutely discards not only all tents but injections.

Another step in cure of fistulas is duly to press their bottoms towards their orifices or apertures: for this purpose, a narrow compress, or slip of plaster in that form, is, after the ulcer is cleansed, and proper medicines put into the fistula, to be applied to its bottom, and secured with lint, plasters, and bandage. It is most expedient to apply the bandage first to the bottom of the fistula, or at least make it tightest there, that the peccant matter may be propelled from the bottom to the mouth of the fistula, whereby the bottom will be conglutinated before the rest of the fistula. This generally happens sooner in fistulas of the arms or legs, than in those of other parts, especially if their bottoms lie towards the superior, and their mouths towards the inferior parts of the members.

When fistulas lie too deep, to have their most remote cavities commodiously cleansed, detergent medicines are to be injected to wash out the sordes; such as decoctions of agrimony or birthwort, mixed with honey of roses, or essence of myrrh and aloes; or, which Belloste greatly commends, a decoction of the leaves of the walnut-tree, with an admixture of sugar.

But if the method of cure already directed should prove insufficient both for cleansing and conglutinating fistulas, greater relief is generally obtained from manual operation, especially when the fistulas are directed downwards, or too winding, or when their bottoms cannot be sufficiently compressed: and, in these cases, an incision is to be made, from their mouths to their very bottoms.

Some grooved probe is, therefore, to be

gently passed into the cavity of the fistula, and introducing a knife into the groove, as much of the skin and flesh is to be cut, as is thought safe or sufficient to answer the end; that not only the corrupted matter may be more expeditiously discharged, but medicines more commodiously applied.

If upon making an incision into a fistula, a large quantity of blood should be discharged, the wound is, in the first dressing, to be filled with dry lint, and duly dressed: then a digestive ointment, in conjunction with the Egyptian ointments, or red precipitate, is to be applied till the ulcer is sufficiently deterged. The other measures to be taken are the same as in recent ulcers. *Heister's Surgery.*

FISTULA in Ano, in surgery, an abscess running upon or into the intestinum rectum; though an abscess in this part, when once ruptured, does generally, if neglected, grow callous in its cavity and edges, and becomes, at last, what is properly called a fistula.

That the anus is so often exposed to this malady, in any crisis of the constitution, is chiefly ascribed to the depending situation of the part; but what very much conduce to it likewise, are the great quantities of fat surrounding the rectum, and the pressure the hæmorrhoidal vessels are liable to, which, being sustained upon very loose membranes, will be less able to resist any effort that nature shall exert, to sling off a surcharge; and from one step to another, that is, from inflammation to suppuration, lead on to the distemper we are treating of.

That the fat is the proper subject of abscesses, may be learned from an inflammation of the skin affecting the membrana adiposa, and producing matter there; in which case, a suppuration runs from cell to cell, and in a few days lays bare a great quantity of flesh underneath, without affecting the flesh itself: nay, I think it may be doubted, whether, in those abscesses which are esteemed suppurations of the muscles, the inflammation and matter are not absolutely first formed in this membrane, where it is insinuated between the interstices of their fibres.

The piles, which are little tumours formed about the verge of the anus, immediately within the membrana interna of the rectum, do sometimes suppurate, and become the forerunners of a large abscess; also external injuries here, as in every other part of the body, may produce it; but from whatever cause the abscess

abscess arises, the manner of operating upon it will be according to the nature and direction of its cavity.

If the surgeon has the first management of the abscess, and there appears an external inflammation upon one side of the buttock only; after having waited for the proper maturity, let him, with a knife make an incision the whole length of it; and, in all probability, even though the bladder be affected, the largeness of the wound, and the proper application of the doffils lightly pressed in, will prevent the putrefaction of the intestine, and make the cavity fill up like imposthumations of other parts.

If the sinus is continued to the other buttock, almost surrounding the intestine, the whole course of it must be dilated in like manner; since, in such spongy cavities, a generation of flesh cannot be procured but by large openings; whence also, if the skin is very thin, lying loose and flabby over the sinus, it is absolutely necessary to cut it quite away, or the patient will be apt to sink under the discharge, which, in the circumstance here described, is sometimes excessive. By this method, which cannot be too much recommended, it is amazing how happy the event is likely to be; whereas, from neglecting it, and trusting only to a narrow opening, if the discharge does not destroy the patient, at least the matter, by being confined, corrupts the gut, and, insinuating itself about it, forms many other channels, which, running in various directions, often baffle an operator, and have been the cause of a fistula being so generally esteemed very difficult of cure.

Here I have considered the imposthumation as possessing a great part of the buttock; but it more frequently happens, that the matter points with a small extent of inflammation on the skin, and the direction of the sinus is even with the gut: in this case, having made a puncture, you may, with a probe, learn if it has penetrated into the intestine, passing your finger up it, and feeling the probe introduced through the wound into its cavity; though for the most part, it may be known by a discharge of matter from the anus. When this is the state of the fistula, there is no hesitation to be made, but, immediately putting one blade of the scissars up the gut, and the other up the wound, snip the whole length of it. This process is as advisable when the intestine is not perforated, if the sinus is

narrow, and runs upon or very near it; for, if the abscess be tented, which is the only way of dressing it, while the external orifice is small, as I have here supposed, it will almost certainly grow callous; so that the surest means of cure will be opening the gut, that proper applications may be laid to the bottom of the wound. However, it should be well attended to, that some sinuses, pretty near the intestine, neither run into nor upon it, in which case they must be opened, according to the course of their penetration. There are abundance of instances, where the intestine is so much ulcerated, as to give free issue to the matter of the abscess by the anus; but I believe there are none where there is not, by the thinness and discolouration of the skin, or an induration to be perceived through the skin, some mark of its direction; which, if discovered, may be opened into with a lancet, and then it becomes the same case as the matter had fairly pointed.

If the sinuses into and about the gut are not complicated with an induration, and you can follow their course, the mere opening with scissars, or a knife guided on a director, will sometimes suffice; but it is generally safer to cut the piece of flesh, surrounded by these incisions, quite away; and when it is callous it is absolutely necessary, or the callosities must be wasted afterwards by escharotic medicines, which is a tedious and cruel method of cure.

When the fistula is of a long standing, and we have a choice of time for opening it, a dose of rhubarb the day before the operation will be very convenient, as it not only will empty the bowels, but also prove an astringent for a while, and prevent the mischief of removing the dressings in order to go to stool.

It sometimes happens that the orifices are so small as not to admit the entrance of the scissars, in which case sponge tents must be employed for their dilatation.

In performing these operations on the anus, I do not think, in general, any instrument so handy as the knife and scissars: almost all the others which have been invented to facilitate the work, are not only difficult to manage, but more painful to the patient: however, in those instances where the fistula is very narrow, and opens into the intestines, just within the verge of the anus, the syringotomy may be used with advantage: but, when the opening into the guts is high, it cannot

not be employed without giving great pain. I do not caution against cutting the whole length of the sphincter, experience having shewn it may be done with little danger of an incontinence of excrement; and, in fact, the muscle is so short, that it must generally be done in dilatations of the intestine.

The worst species of fistula, is that communicating with the urethra, and sometimes through the prostrate glands, with the bladder itself. This generally takes its rise from a former gonorrhœa, and appears externally first in the peritonæo, and afterwards increasing more towards the anus, and even sometimes into the groin, bursts out in various orifices, through the skin, which soon become callous and rotten: and the urine passing partly through those orifices, will often excite as much pain, and of the same kind, as a stone in the bladder.

This species of fistula, taking its rise from strictures of the urethra, is only manageable by the bougie: for, so long as the urethra is obstructed, the cure of the fistula will be imperfect; but, if the canal is opened by this application, it is amazing what obstinate indurations and foul sinuses will in consequence disappear; though there are some so callous and rotten, as to demand the knife and skilful dressings, notwithstanding the urethra should be dilated by the use of bougies. *Sharpe's Surgery.*

FISTULA LACHRYMALIS, a disease which attacks the great caruncle in the inward corner of the eye. See article *Eye*.

FISTULAR, or **FISTULOUS**, appellations given by surgeons to wounds and ulcers, which degenerate into fistulas. See the article *Fistula*.

FIT, in medicine, denotes much the same with paroxysm. See *Paroxysm*.

FITCHEE, in heraldry, a term applied to a cross, when the lower end of it is sharpened into a point.

FITTING-OUT, in the sea-language, the act of providing a ship with a sufficient number of men to navigate her; also with provisions of all sorts, artillery, ammunition, masts, yards, sails, cordage, anchors, and other furniture; also the rigging and securing her masts against the dangers of the wind and sea.

FIXATION, in chemistry, the rendering any volatile substance fixed, so as not to fly off upon being exposed to a great heat; hence,

FIXED BODIES are those which bear

a considerable degree of heat without evaporating, or losing any of their weight.

FLACCIDITY, among physicians, a disorder of the solids, cured by astringent and cardiac medicines, joined with exercise and good air.

FLAG, in the sea-language, the banners or colours by which an admiral is distinguished at sea.

FLAGS in the British Navy, are either red, white, or blue; and they are hoisted either at the heads of the main-mast, fore-mast, or mizen-mast.

Flags, when displayed from the top of the main-mast, are the distinguishing marks of admirals; when from the fore-mast, of vice-admirals; and when from the mizen-mast, of rear-admirals.

The highest flag in the British navy is the anchor and rope, which is only displayed when the lord high admiral or lords commissioners of the admiralty are aboard; the next is the union, the distinction peculiar to the second officer, called admiral of the fleet; and the lowest flag is the blue at the mizen-mast.

FLAGEOLET, or **FLAJELET**, a little flute, used chiefly by shepherds and country people. It is made of box, or other hard wood, and sometimes of ivory, and has six holes besides that at the bottom, the mouth-piece, and that behind the neck.

FLAIL, an instrument for threshing corn.

FLAMBEAU, a kind of large taper, made of hempen wicks, by pouring melted wax on their top, and letting it run down to the bottom. This done, they lay them to dry; after which they roll them on a table, and join four of them together by means of red hot iron; and then pour on more wax, till the flambeau is brought to the size required.

FLAME, *Flamma*, in physiology, according to Sir Isaac Newton, is only the smoke of any body heated red hot; and the smoke is only the volatile part of the body separated by the fire. See *Fire* and *Smoke*.

FLAMEN, in Roman antiquity, the name of an order of priests, instituted by Romulus or Numa; authors not being agreed on this head.

* **FLANDERS**, a province of the Low Countries, being the largest county in Europe; it being an hundred miles in length from east to west, and seventy-five in breadth from north to south. It is watered by two rivers, the Scheld and the Lys, or Leye, which not only render the

country fruitful, but serve for the more ready transportation of merchandize. When we consider the number of cities in this country, it is easy to judge that the ancient earls of Flanders must needs be very opulent. They reckon thirty walled cities, a great number of towns which have the privilege of cities, forty-eight abbeys, one thousand one hundred and fifty-four villages, five viscounties, and three small principalities. All these towns and villages are so near each other, that when the Spaniards first entered this country, it seemed to them to be but one city, composed of a great number of streets. Flanders has been variously divided formerly, but it is now distinguished by Dutch Flanders, Austrian Flanders, and French Flanders. French Flanders is bounded by Artois, and traversed by the river Lys. It begins near this river, and extends towards the south as far as the frontiers of Hainault. The principal places are Lille, Doway, and Dunkirk. The principal places in Austrian Flanders lie partly on the river Lys, and partly near the North Sea: these are Ghent, Bruges, Ostend, Nieuport, Dixmuyden, Ypres, Courtray, Menin, Tournay, Oudenarde, and Dendermonde. Dutch Flanders forms a long district to the west of the river Scheld, between Bruges and Antwerp. The Dutch conquered this country before the treaty of Westphalia, and have preserved it hitherto as a bulwark or barrier to their republic. The principal places are Sluys, Sas van Ghent, Hulst, and several small fortified places and strong forts. Flanders is quite a flat level country, having no hill or rising ground in it, except in French Flanders, and is watered with innumerable canals and rivulets. The air is gross, on account of its vicinity to the sea, and its numerous standing waters. The north wind is very frequent, the winters are long, and the summers rainy, and sometimes extremely hot, but then the heats do not last long. This country produces all things necessary for life in great abundance, as wheat, rye, barley, oats, Turkey corn, hay, clover, flax, and all sorts of pulse. There are no vines, for which reason their common drink is ale or beer. This country is very fit for the feeding of cattle, for which reason they bring hither those that are lean from the neighbouring provinces, and here they become fat in a short time. The cows give a prodigious quantity of milk, and in some places the sheep have lambs three times in a year. The horses

are large, with big heads, and are not very proper for some sorts of business. There is no stone quarries, nor slate, in all the country, for which reason the ancient houses were built of wood; this rendered the towns very liable to fires, which obliged the government to forbid the continuance of that practice in the towns, and to order that they should henceforward be constructed with stone and bricks.

FLANNEL, or **FLANEL**, a loose sort of woollen stuff not crossed, and wove on a loom with two treddles, like bays.

FLANKS of an Army, the troops encamped on the right and left, as the flanks of a battalion are the files on the right and left.

FLANK of a Bastion, in fortification, that part which joins the face to the curtain.

Oblique FLANK, or **Second FLANK**, that part of the curtain from whence the face of the opposite bastion may be discovered.

Retired FLANK, or **Low FLANK**, or **Covered FLANK**, one of the platforms of the cazemate.

FLANKED ANGLE, in fortification, that formed by the two faces of a bastion.

FLANKING ANGLE, or *Angle of the TENAILLE*, that composed of the two lines of defence, and pointing towards the curtain. See *Tenaille*.

FLANKING Line of Defence. See *Line of Defence*.

FLATS, in music, a kind of additional notes, which, together with sharps, serve to remedy the defects of musical instruments, wherein temperament is required. See *Temperament* and *Sharp*.

FLATULENCY, in medicine, a disorder of the bowels arising from a weak stomach, and crude flatulent aliment, as pease, beans, lentils, coleworts, hard fat flesh, &c. which degenerate into wind, creating great anxiety if not evacuated, and difficulty of breathing.

Another cause of flatulencies are congestions of blood in the branches of the vena porta; whence proceed anxieties of the præcordia, difficult breathing, cholic pains, heart-burn, head-achs, vertigo, and watchfulness.

If the flatulency arises from crudities in the stomach, evacuations are first of all necessary; after which may be given bitters, aromatics, carminatives, and strengtheners, with a spare diet and exercise. If it proceeds from congestions of blood, as is the case of hypochondriacs, a vein must be opened; and if the body is costive,

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cōstive, an emollient clyster or a gentle laxative will be proper. If these fail, chalybeate medicines are to be called in, as tincture of vitriol of iron, steel-slings finely powdered, from six to ten grains, or oil of cinnamon with sugar or bitters, spaw waters, and constant exercise.

FLAX, *Linum*, in botany, a plant from which linen is manufactured.

There are several species of this plant, which are preserved in some curious gardens of plants for variety sake; but, as they are of little use or beauty, it would be needless to expatiate on them in this place.

The *linum sativum*, or manured flax, is that which is cultivated for use in divers parts of Europe, and is reckoned an excellent commodity: the right tilling and ordering of which is esteemed a good piece of husbandry.

This should be cultivated upon a rich soil that has not been ploughed for several years, upon which flax always makes the best improvement: but, as it draws greatly from the soil, it should not be sown two years together upon the same ground. The land must be well ploughed, laid flat and even, upon which the seeds should be sown about the middle of March, when the weather is mild and warm. During the spring, you must carefully weed it; which if neglected, especially in a moist season, the weeds will over-grow and destroy the crop. There are some persons who recommend the feeding of sheep with flax, when it is a good height; and say, they will eat away the weeds and grass, and do the flax good; and if they should lie in it, and beat it down, or flatten it, the next rain that falls will rise it again: but this must not be practised but in a moist season, and upon a rich soil; for if the ground be poor, or the spring dry, it will not rise again to any considerable height.

The best seed is that which comes from the East country, and is known by the name of Riga flax; for if the English seed be sown three or four times, it is very apt to degenerate. If the seed be good, two bushels will be enough to sow an acre; but if it be but middling, there should be a greater allowance. Towards the latter end of August the flax will begin to ripen, when you must be careful that it grow not over ripe; therefore you must pull it up as soon as the heads begin to change brown, and hang downwards, otherwise the seeds will soon scatter, and

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be lost; so that the pluckers must be nimble, and tie it up in handfuls, setting them upright till they be perfectly dry, and then house them. If the flax be pulled when it first begins to flower, it will be whiter and stronger than if it stands till the seed is ripe; but then the seed will be lost.

This is a plant of the greatest use in several of the most essential parts of life: from the seeds an expressed oil is drawn, which is of great use in medicine, painting, &c. from the bark of the stalks is made linen, and from the rags of linen is made paper: so that this plant may be esteemed as one of the most valuable and necessary in many of the principal conveniencies of life. *Miller's Gard. Dict.*

FLEA, *Pulex*, in zoology, a genus of insects too well known, to need a description.

FLEAM, in surgery and farriery, an instrument for letting a man or horse blood.

FLEECE, the covering of wool, shorn off the bodies of sheep.

Order of the Golden FLEECE, an order of knighthood instituted by Philip II. duke of Burgundy. These knights were at first twenty four, besides the duke himself, who reserved the nomination of six more; but Charles V. increased them to fifty. He gave the guardianship of this order to his son Philip, king of Spain, since which the Spanish monarchs are chiefs of this order. The knights had three different mantles ordained them; at the grand solemnity, the collar and fleece.

FLEET, in naval affairs, a company of ships of war, or merchantmen, or both, bound on any particular expedition or voyage.

FLEMISH, or the **FLEMISH-TONGUE**, that which we otherwise call Low Dutch, to distinguish it from the German, of which it is a corruption, and a kind of dialect. It differs from the Walloon, which is a corruption of the French language. The Flemish is used through all the provinces of the Netherlands.

FLEMISH BRICKS, a neat, strong, yellow kind of bricks, brought from Flanders, and commonly used in paving yards, stables, &c. being preferable for such purposes to the common bricks.

FLESH, *Caro*, in anatomy, a similar fibrous part of an animal body, soft and bloody, being that of which most of the other parts are composed, and whereby they are connected together.

FLESH, among botanists, the substance

of any fruit that is between the outer rind and the stone; or that part of any root that is fit to be eaten.

FLESH-COLOUR. See *Carnation*.

FLETCHER, (JOHN) an excellent dramatic poet, was the son of Dr. Richard Fletcher, Bishop of London. He was born in Northamptonshire, in 1576, and was educated at Cambridge. He wrote plays jointly with Mr. Beaumont, but what share each bore in forming the plots, writing the scenes, &c. is not known. We are told, he assisted Ben Johnson in writing a comedy called the *Widow*. His *Faithful Shepherdess*, which, it is certain, he wrote without the assistance of his colleague, is greatly commended by the poets, though its reception on the stage fell greatly short of its merit. Fuller tells us, that Mr. Fletcher meeting once at a tavern, to contrive a rude draught of a tragedy, undertook to kill the king, when his words being overheard, he was seized and charged with high treason; but the mistake being soon discovered, it occasioned a great deal of mirth. He died of the plague, at London, in 1625, aged 49, and was interred in St. Mary Overy's, in Southwark.

FLEUR DE LISEE, in heraldry, the same with flory. See *Flory*.

FLEXIBLE, in physics, a term applied to bodies capable of being bent or diverted from their natural figure or direction.

FLEXION, in anatomy, the motion by which the arm or any other member of the body is bent. It is also applied to the muscles, nerves, &c.

FLINT, *Silex*, in natural history, a semipellucid stone, composed of crystal debased with earth, of one uniform substance, and free from veins; but of different degrees of colour, according to the quantity of earth it contains, and naturally surrounded with a whitish crust. Flint is a stone of an extremely fine, compact, and firm texture, and very various, both in size and figure. It is of all the degrees of grey, from nearly quite black to almost quite white. It breaks with a fine, even, glossy surface; and is moderately transparent, very hard, and capable of a fine polish. It readily strikes fire with steel, and makes not the least effervescence with aquafortis, and burns to a whiteness. Its uses in glass-making, &c. are too well known to need a particular recital. It is not uncommon to find on our shores fine, pellucid, flinty bodies, streaked or veined with white, black, brown, &c. These are the agates of this country, and answer in every particular,

but fineness, to the gem. See the article *Agat*. The manner of preparing flints for the nicer operations in the glass-trade, is this: after freeing them from the white crusts with which they are commonly surrounded, calcine them in a strong fire; then powdering them in an iron mortar, sift the powder through a very fine sieve: pour upon this powder some weak aquafortis, to dissolve any particles of iron it may have got from the mortar; then, after standing some time, wash it well with hot water, and dry it for use.

Oil of FLINTS, a name given to the liquor obtained from a mixture of four ounces of calcined and powdered flints, with twelve ounces of salt of tartar: this being melted together in a strong fire, runs into glass; which is to be powdered and set in a cellar, where it runs into an oil per deliquium.

FLOAT of a Fishing-Line, the cork or quill that floats above water. See *Fishing*.

FLOAT also signifies a certain quantity of timber bound together with rafters, athwart, and put into a river to be conveyed down the stream; and even sometimes to carry burdens down a river.

FLOAT-BOARDS, those boards fixed to water-wheels of under-shot mills, serving to receive the impulse of the stream, whereby the wheel is carried round. See *Wheel* and *Mill*.

It is no advantage to have too great a number of float-boards, because, when they are all struck by the water in the best manner that it can be brought to come against them, the sum of all the impulses will be but equal to the impulse made against one float-board at right angles, by all the water coming out of the penstock through the opening, so as to take place on the float-board.

FLOATAGES, all things floating on the top of the sea or any water.

* **FLODDEN**, Battle of, September 9, 1513, in which James the fourth of Scotland was killed. James entered Northumberland in the month of August, at the head of a numerous army, and reduced Northam, with several other places. This expedition was hastened by the defeat of the earl of Hume, who had been sent with six thousand men, to make an incursion into England; and in his return fell into an ambush laid by Sir William Bulmer, who routed him at the pass of Broomhouse. This disgrace exasperated James, and induced him to precipitate his invasion, contrary to the advice of his nobles, and the incli-

inclination of his queen, who exerted all her influence in dissuading him from the enterprize. He remained, however, deaf to all those remonstrances; and suffered himself to be hurried to his own ruin by a false punctilio, aided by the insinuation of De la Mothe the French ambassador. The earl of Surry was no sooner informed of his motions, than he appointed Newcastle as the place of rendezvous for the forces of the northern counties; and on the thirtieth day of August, he was there joined by the lord Dacres, Sir William Bulmer, Sir Marmaduke Constable, and many other persons of distinction. James, since the reduction of Norham, had lost some precious time in idle dalliance with the daughter of a northern baron, owner of the castle of Ford; and the English general resolved to go in quest of him without delay. On the third day of September he marched to Alnwick, where he was reinforced by his own son the lord admiral, at the head of five thousand chosen men; so that the army now amounted to six and twenty thousand men eager for battle. James had taken possession of a strong camp on a mountain called Flodden-hill, in the neighbourhood of Ford, where he indulged himself in his amorous commerce, so as to give umbrage to the best and wisest of his subjects. Great part of his army deserted to their own country, with the plunder they had gained. The earl of Angus returned to Scotland in disgust; and the earl of Hume, with many others, expressed such indifference, at such a juncture, as even amounted to treachery. In a word, the king of Scotland saw his troops diminished one half; but, he was so advantageously posted, that the English could not attack him with any probability of success. The earl of Surry, knowing his disposition, sent an herald with a defiance, couched in the most provoking terms; and James declared he would give him battle on the Friday following. Surry forthwith drew up his army in order of battle, and marched to Woller-haugh, within three miles of the Scottish camp, made a motion towards the left, along the river Till, which he passed, and then directed his march towards the Tweed, as if he intended to cut off the communication between the enemy and Scotland. The country was by this time so wasted by the Scots, the roads so broken, and the rivers so swelled by the rains, that he would have found it impossible to establish magazines, or subsist for any length of time, while the enemy enjoyed abundance. The Scots were

not ignorant of the advantages they possessed; and the earl of Huntley, in a council of war, expatiated upon them with great strength of argument; observing, that it would be madness to fight the English on their own terms, especially as they were superior in number of men; and that in a few days they would be obliged to retire for want of provision. James rejected this advice, as a proposal that derogated from his honour, and determined to fight them according to his promise. He forthwith ordered his huts to be set on fire; and, under favour of the smoke quitted his advantageous situation, that he might draw up his army in the plain, where he already found the English in order of battle, so near, that his artillery planted on the declivity of a hill, could do no execution. They were formed into three lines; the first commanded by the lord admiral; the second by Sir Edward Howard, and Sir Marmaduke Constable; and the third by the earl of Surry, assisted by the lord Dacres, and Sir Edward Stanley. The king of Scotland drew up his army on the rising ground, not without great damage from the English artillery, planted at the pass of Millfield. The command of the van was given to the earl of Huntley; the second line was commanded by the earls of Lennox and Argyle; while the earls of Crawford and Montrose conducted the body of reserve; and James himself acted as a volunteer in his own army. Huntley charged the division of Howard with such fury, that it was immediately put in confusion and routed: but, it was so seasonably supported by the lord Dacres, that the men rallied, and the battle became general. Both sides fought for a long time with incredible impetuosity, until the Highlanders being galled by the English artillery, broke in sword in hand upon the main body commanded by the earl of Surry; and at the head of these, James fought in person with the most forward of his nobility. They attacked with such velocity, that the other line could not advance in time to sustain them; so that a body of the English intercepted their retreat: the earls of Crawford and Montrose were routed by the lord admiral, and his rallied forces, while the earl of Hume and his followers stood inactive, without making the least motion to their assistance. In the mean time, James being almost surrounded by the enemy, refused to quit the field, while it was yet in his power. He scorned to survive the disgrace of a defeat: but, alighting from his horse, formed his little

little body into an orb, resolving that the English should pay dear for the victory. In this posture he fought with such desperate courage, as restored the battle; and even obliged the English to avoid the close fight, and have resource to their arrows and artillery, which made terrible havock. The earls of Montrose, Crawford; Argyle, and Lennox, were killed upon the spot, with the bravest of their men; and the king of Scotland is said to have fallen in the midst of his slaughtered subjects. The engagement, however, was protracted until night parted the combatants. The darkness favoured the retreat of the Scots; and the English did not think the victory ascertained, until the next day, when they found themselves masters of the field, and the enemy's artillery. Ten thousand Scots are said to have perished on this occasion; and the victors lost about half that number. A body, supposed to be that of James, was inclosed in a leaden coffin, and sent to London, where it remained unburied, until it was absolved by the pope of the sentence of excommunication, which he had incurred on account of his attachment to Lewis. The Scottish historians pretend, that this was not the body of James, but of a young gentleman called Elphinston, who, has several other volunteers, were habited like the king, that is danger might be the more divided. They allege, that James was seen on the other side of the Tweed after the battle; and that he was assassinated by the earl of Hume, who bore an inveterate grudge to his person. Be that as it will, he was a prince of great courage and generosity, and died universally lamented by his subjects, who loved him with extraordinary affection.

FLOOD, a deluge or inundation of waters. See *Deluge*.

FLOOR, in architecture, the under side of a room, or that part we walk on.

FLOOR, in ship-building, the bottom of a ship, or all that part on each side of the keel, which approaches nearer to an horizontal than a perpendicular situation.

FLOOR-TIMBERS, those which are placed immediately across the keel, upon which the bottom of the ship is framed, and the upper parts of the timbers are constructed. See *Timber*.

* **FLORA**, the goddess of flowers, was, according to the poets, the wife of Zephyrus, and was first honoured amongst the Sabines; but according to Lactantius,

she was a lady of pleasure, who, having gained large sums of money by prostituting herself, made the Roman people her heir, on condition that certain games, called Floralia, might be annually celebrated on her birth-day. Her image in the temple of Castor and Pollux was dressed in a close habit, and she held in her hands the flowers of peas and beans; but the modern poets and painters have been more lavish in setting off her charms, considering that no parts of nature offered such innocent and exquisite entertainment to the sight and smell, as the beautiful variety which adorns, and the odour which embalms the floral creation.

FLORID STYLE, that too much enriched with figures and flowers of rhetoric.

FLORIN, is sometimes used for a coin, and sometimes for money account.

Florin, as a coin, is of different values, according to the different metals and different countries where it is struck. The gold florins are most of them a very coarse alloy, some of them not exceeding thirteen or fourteen carats, and none of them seventeen and a half. As to silver florins, those of Holland are worth about 1s. 8d. those of Genoa were worth 8d. 1-4th. sterling.

Florin, as money of account, is used by the Italian, Dutch, and German merchants and bankers, but admits of different divisions in different places: in Holland it is on the footing of the coin of that name, containing twenty stivers. At Frankfort and Nuremberg it is equivalent to 3s. sterling, and is divided into creutzers, and pfennings. At Liege it is equivalent to 2s. 3d. At Strasbourg, to 1s. 8d. In Savoy, to 11d. At Genoa, to 8 $\frac{1}{2}$ d. And at Geneva, to 6 $\frac{1}{2}$ d. See the article *Coin*.

FLORIST, in the more common acceptation of the word, signifies a person well skilled in flowers, their kinds and cultivation. See *Flower*.

FLORY, **FLOWRY**, or **FLEURY**, in heraldry, a cross that has the flowers at the end of the circumflex and turning down, differing from the potence, inasmuch as the latter stretches out more like that which is called patee.

FLOS, in chemistry, the most subtle part of bodies separated from the more gross parts by sublimation, in a dry form.

FLOSCULOUS, among botanists, an appellation given to compound flowers made up of a number of lesser ones, all inclosed in the same common cup.

FLOUNDER, the English name of a well-

well-known fish, called by ichthyologists the pleuronectes, with the eyes in the right side, the lateral or side lines rough, and small spines at the fins.

FLOUR, the meal of wheat-corn, finely ground and sifted. See *Meal*.

FLOWER, *Flos*, among botanists and gardeners, the most beautiful part of trees and plants, containing the organs or parts of fructification. See *Fructification*.

The parts of a flower are the ovary, or pistil, the corolla or flower-petals, the stamina or chives, the empalement or calyx, the perianthium, pericarpium, and fruit.

According to the number of petals, or flower-leaves, flowers are called monopetalous or one-leaved, dipetalous or two-leaved, tripetalous or three-leaved, &c. Flowers are again distinguished into male, female, and hermaphrodite: the male flowers are those containing stamina, without any pistil or fruit, commonly called staminate flowers. The female flowers are such as contain the pistil, which is succeeded with fruit; these are called fruitful or knitting flowers. The hermaphrodites are those which contain the organs of both sexes, viz. stamina and pistils; and these are by far the most numerous.

From the different figures and disposition of the flower-leaves of plants, Mr. Tournefort has established a system of botany; whereas that of Linnæus is chiefly founded on the number and disposition of the stamina. See *Botany*.

FLOWER-DE-LIS, or **FLOWER-DE-LUCE**, in heraldry, a bearing representing the lily, called the queen of flowers, and the hieroglyphic of royal majesty; but of late it is become more common, being borne in some coats one, in others three, in others five, and in some semee, or spread all over the escutcheon in great numbers.

The arms of France are, three flowers de lis, or, in a field azure.

FLOWING SHEET, in the sea-language. A ship is said to have a flowing-sheet when the wind crosses the line of her course at right-angles, that is to say, a ship steering north, with the wind at east, has a flowing sheet; for if she were close-hauled, she would steer two points nearer the wind, viz. N. N. E.

FLOX, among dyers, well cleaned wool, used to absorb the colours of cochineal.

FLUENT, in fluxions, the flowing quantity, or that which is continually

either increasing, or decreasing, whether line, surface, solid, &c. See *Fluxion*.

It is easy to find the fluxions, where the fluents are given; but, on the contrary, it is very difficult to find the fluents of given fluxions.

FLUID, in physiology, an appellation given to all bodies, whose particles easily yield to the least partial pressure, or force impressed.

Those particles considered separately, are endued with all the common properties of matter, and are subject to the same laws of motion and gravitation with larger bodies. To enquire, therefore, into the nature of fluids, is to consider what appearances a collection of very small round bodies, subject to these laws, will exhibit under different circumstances.

Laws and Properties of FLUIDS. All fluids have little degree of comprehensibility, except air; or they cannot, by any force, be compressed into a much less space than what they naturally possess, as is proved by the Florentine experiment, of filling a globe of gold with water, which, when pressed with great force, causes the water to transude or issue through the pores of the gold, in form of a dew all over its surface. See *Water*.

Motion of FLUIDS. The motion of fluids, viz. their descent or rise below or above the common surface or level of the source or fountain, is caused either, 1. By the natural gravity or pressure of the fluid contained in the reservoir, or fountain: or, 2. By the pressure or weight of the air on the surface of the fluid in the reservoir, when it is at the same time either taken off or diminished on some part in aqueducts, or pipes of conduit. 3. By the spring, or elastic power of compressed or condensed air, as in the common water engine. 4. By the force of pistons, as in all kinds of forcing pumps, &c. 5. By the power of attraction, as in the case of tides, &c.

Momenta and velocities of FLUIDS. The momenta of fluids, as well as of solids, is compounded of the quantity of matter and velocity; but in spouting fluids, the quantity of the fluid issuing through the same hole, in the same time, is always as the celerity of its motion, as is easy to conceive. Whence the momenta of spouting fluids, are proportional to the squares of the velocities, or quantities of matter issuing out in a given time. But since the momenta are the effect of pressure, it is evident the velocity or quantity of spouting fluids is ever proportional to the square-

root of the pressure, or altitude of the fluid. From hence it appears that the velocity of a spouting fluid, of any depth below the surface, is equal to the velocity a heavy body would acquire by falling from the same height; because the velocity, as was observed, is always as the square-root of the space descended through.

FLUOR, in physics, a fluid, or more properly, the state of a body that was before hard or solid, but is now reduced by fusion, or fire, into a state of fluidity.

FLUOR, in mineralogy, a sort of mineral concretion, frequently found among ores and stones, in mines or quarries.

FLUOR ALBUS, or WHITES, in medicine, a discharge of whitish or gleety matter by the natural parts of the fair sex. This humour issues sometimes from the vessels of the uterus, and sometimes from the glands of the vagina. In the former case the discharge is suppressed during the time of the menstrual courses; in the latter it subsists with them, and continues even in the time of pregnancy.

In both species of the disease the principal intention ought to be directed towards mending the habit of body, from some fault in which they derive their origin: but when the seat of the distemper is in the vagina, it will, however require topical applications.

Wherefore, generally speaking, it will be proper, to begin the cure by giving them a vomit, especially with ipecacuanha wine; frequent purging is indicated, chiefly with rhubarb; which may be taken either in substance, with the addition of aromatics, and in some cases of a little calomel now and then; or in the tincture of rhubarb in wine. And the laxity of the fibres requires astringents, particularly such as have steel in their composition.

As to external or topical remedies, which I have said are necessary, when the vagina is the seat of the disease; we ought carefully to avoid applying all such as are powerful repellers of the peccant humours: for those only are serviceable, which deterge and heal the little ulcers of that membrane. For my part, I have often, with great success, ordered the patient to inject a small quantity of Bates's aqua aluminosa, or of the camphorated vitriolic water, with a little Egyptian honey added to either, into the vagina through a proper syringe, at repeated times: and it will be of some service to fumigate the vagina now and then with a powder

made with equal parts of frankincense, mastich, amber, and cinnabar of antimony, thrown on burning coals. *Mead's Monita Precepta.*

German FLUTE, an instrument entirely different from the common flute. It is not, like that, put into the mouth to be played, but the end is stoppt with a stopper or plug; and the lower lip is applied to a hole about two inches and a half, distant from the end. This instrument is usually about a foot long; rather bigger at the upper end than the lower; and perforated with holes, besides that for the mouth, the lowest of which is stoppt and opened by the little finger's pressing on a brass, or sometimes a silver key, like those in hautboys, bassoons, &c. It is found exceeding sweet and agreeable, and serves as a treble in a concert.

FLUTES or FLUTINGS, in architecture, perpendicular channels, or cavities, cut along the shaft of a column, or pilaster. They are chiefly affected in the Ionic order, where they had their first rise; though, indeed, they are used in all the richer orders, as the Corinthian and Composite; but seldom in the Doric, and scarce ever in the Tuscan. Each column has twenty-four flutes, and each flute is hallowed in exactly a quadrant of a circle; but the Doric has but twenty. Between the flutes are little spaces that separate them, which Vitruvius calls stria, and we list: though, in the Doric, the flutes are frequently made to join to one another, without any intermediate space at all; the list being sharpened off to a thin edge, which forms a part of each flute. Sometimes the flutings are made flat, and are called facettes; but these have never such a good effect as the others. Vitruvius says, that when there are flutings in the column, there ought also to be eggs and anchors in the quarter-round of the capital, and even pearls and olives, in a baguette, to be made underneath, instead of annulets. These eggs and olives ought to be of the same number with the flutings, and to be regularly distributed.

FLUX, in medicine, an extraordinary issue, or evacuation, of some humours of the body.

FLUX of the urine. See *Diabates*.

FLUX, in hydrography. See *Tide*.

FLUX, in metallurgy, whatever can cause any body, otherwise not at all, or hardly, fusible by fire, to melt.

Fluxes, says Dr. Shaw, seem reducible to two generally kinds, viz. the vitreous and

and the saline. By the vitreous we understand all those which either have of themselves, or readily assume, a glassy form in the fire; among the principal of which are reckoned the glass of lead, the glass of antimony, and borax. By the saline kind of fluxes are understood all those that are composed of salts, whether tartar, nitre, fixed alkali, or the like. Among the principal of this kind we reckon the black flux, sandiver, kelp, &c. See *Sandiver* and *Kelp*.

The method of making the black flux is as follows: Take one part nitre, and two parts common tartar, and reducing each to powder, mix them together: deflagrate the whole in a crucible, by lighting the mixture a-top, which thus turns to a kind of alkaline coal, that is to be pulverized and kept close in a glass, to prevent its dissolving, as it would do in a moist air.

Some of the most powerful and cheap simple fluxes hitherto known; are dried wine-lees, dried cow-dung, and horse-dung, dried river mud, fuller's earth, iron-filings, common salt, glass, kelp, or potashes, sandiver, &c. which may be used in the larger work, as nitre, tartar, borax, sal ammoniac, mercury, sublimate, &c. may in the smaller, or for making of assays.

As for the compound fluxes, they are numerous; almost every operator having his favourite flux. And, certainly, some fluxes are better adapted than others to certain ores. But perhaps a few general ones might be fixed upon, which should serve instead of all those hitherto commonly known and used. We will here recommend three, which are powerful, almost general, and not expensive.

1. Take of nitre, prepared by long boiling it in lime-water of sea salt melted in the fire, sandiver, and dry wine-lees, each one part; glass of lead, three parts; and powdered glass, eight parts; mix them well together. This flux added in an equal weight, will fuse a very stubborn ore.

2. For a still stronger, take equal parts of white tartar, common salt, and nitre, prepared as above: calcine them to a white powder: and mix therewith its own weight of glass and lead; and of this flux add two parts to one of the most stubborn ore.

3. For a powerful saline flux. Take of the strongest soapboiler's lees, four pounds; white tartar, and common salt melted in the fire, each one pound; boil them together with five gallons of human urine,

to a dry salt. This flux is particularly proper where sulphur and cobalt abound, and render the ore very refractory.

The melting of gold and silver, and of their calxes, is greatly promoted by glass of lead, alkaline salts, &c. but when gold and silver, in the fusion itself, are to be purged from other metals and semimetals, it is proper to use nitre only; or if not so, nitre always must be mixed with the other salts; for the semimetals and the four less perfect metals are destroyed by nitre.

FLUXIONS, in mathematics, the velocities of the increments of variable or indeterminate quantities, considered not as actually generated, but as arising or beginning to be generated: and to form a just and adequate notion of them, we are to consider mathematical quantities, not as made up of an infinite number of very small constituent parts, but as generated or described by continued uninterrupted motion or regular flux. A line is described, and in that description is generated, not by the apposition of parts, but by the continual motion of a point. A surface is generated by the uninterrupted motion of a line, moving in any direction except that of its length, and a solid by the constant motion of a superficies, moving in any direction provided it be not in the plane of the said superficies. An angle by the rotation of one of its legs. And the quantities thus generated in equal spaces of time, become equal, greater or lesser, according as the celerities of the motions, by which they were generated, are equal, greater, or lesser.

The inverse Method of FLUXIONS, or having the fluxion given to find the flowing quantity or its fluent.

How from given fluxions to find the fluents, or flowing quantities themselves, is a problem no less difficult than it is useful, and, in some cases, almost impossible; and could it be completely and universally solved, it would, in a manner, render the science of geometry complete, and set bounds to farther improvements.

Sir Isaac Newton, the illustrious author of this discovery, tells us, in his treatise of the quadrature of curves, that in order to find the fluents of given fluxions, we may assume a fluent at pleasure; and that this assumption, which must be gathered from the consideration of the nature of the fluxion itself, must be corrected, by putting the fluxion of the assumed fluent, equal to the fluxion proposed, and comparing the homologous terms together: and after

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you have found the fluents of the given fluxions (if you doubt the truth of it,) collect the fluxions of the fluents found, and compare them with the fluxions at first given; if they come out equal, the conclusion is right; if not, you must correct your fluents, so as to make their fluxions come out equal to the fluxions proposed.

FLY, in zoology, a large order of insects, the distinguishing characteristic of which is, that their wings are transparent; by this they are distinguished from beetles, butterflies, and grasshoppers. *See Beetle and Butterfly.*

FLY, in mechanics, a cross with leaden weights at its ends, or rather a heavy wheel at right angles to the axis of a windlass, jack, or the like; by means of which the force of the power, whatever it be, is not only preserved, but equally distributed in all parts of the revolution of the machine. The fly may be applied to several sorts of engines; whether moved by men, horses, wind, or water, or any other animate or inanimate power; and is of great use in those parts of an engine which have a quick circular motion, and where the power of resistance act unequally in the different parts of a revolution. This has made some people imagine that the fly adds a new power; but though it may be truly said to facilitate the motion, by making it more uniform, yet upon the whole it causes a loss of power, and not an increase: for as the fly has no motion of its own, it certainly requires a constant force to keep it in motion; not to mention the friction of the pivots of the axis, and the resistance of the air. The reason, therefore, why the fly becomes useful in many engines, is not that it adds a new force to them, but because, in cases where the power acts unequally, it serves as a moderator to make the motion of revolution almost every where equal: for as the fly has accumulated in itself a great degree of power, which it equally and gradually exerts, and as equally and gradually receives, it makes the motion in all parts of the revolution pretty nearly equal and uniform. The consequence of this is, that the engine becomes more easy and convenient to be acted and moved by the impelling force; and this is the only benefit obtained by the fly.

FLY-BOAT, or **FLIGHT**, in the Dutch marine, certain merchant-ships of a very clumsy form: they are generally from four to six hundred tons, and distinguished by a very high stern, like a gothic turret above, and very broad buttocks below.

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FLYERS, in architecture, such stairs as go straight, and do not wind round; nor have the steps made tapering, but the fore and back part of each stair, and the ends, respectively parallel to one another; so that if one flight do not carry you to your intended height, there is a broad half space, from whence you begin to fly again, with steps every where of the same length and breadth as before.

FLYING, the progressive motion of a bird, or other winged animal, in the liquid air. The parts of birds chiefly concerned in flying, are the wings, by which they are sustained or wafted along. The tail, Mess. Willughby, Ray, and many others, imagine to be principally employed in steering and turning the body in the air, as a rudder.

Artificial **FLYING**, that attempted by men, by the assistance of mechanics. The art of flying has been attempted by several persons in all ages. The Leucadians, out of superstition, are reported to have had a custom of precipitating a man from a high cliff into the sea, first fixing feathers, variously expanded, round his body, in order to break his fall. Frier Bacon, who lived five hundred years ago, not only affirms the art of flying possible, but assures us, that he himself knew how to make an engine wherein a man might be able to convey himself through the air, like a bird; and further adds, that there was then one who attempted it with success; but this method, which consisted of a couple of large, thin, hollow copper globes, exhausted of the air, and sustaining a person who sat thereon, Dr. Hook shews to be impracticable. The philosophers of king Charles the Second's reign, were mightily busied about this art. The famous bishop Wilkins was so confident of success in it, that he says, he does not question but, in future ages, it will be as usual to hear a man call for his wings, when he is going a journey; as it is now to call for his boots.

FLYING-ARMY, a small body under a lieutenant or major general, sent to harass the country, intercept convoys, prevent the enemy's incursions, cover its own garrisons, and keep the enemy in continual alarm.

FLYING-FISH, a name given by the English writers to several species of fish, which, by means of their long fins, have a method of keeping themselves out of the water a long time.

FOAL, or **COLT**, the young of the horse

horse kind. The word colt, among the dealers, is understood of the male kind. Foals are usually foaled about the beginning of summer, and it is the custom to let them run till Michaelmas with the mare, at which time they are to be weaned. Some however are of opinion, that a foal is rendered much sooner fit for service by being allowed to suck the whole winter, and weaned about Candlemas or Shrove-tide. When first weaned they must be kept in a convenient house, with a low rack and manger for hay and oats; the hay must be very sweet and fine, especially at first, and a little wheat bran should be mixed with the oats, in order to keep their bodies open, and make them eat and drink freely. When foals are kept up in the winter, they are not continually to be immured in the stable; but in the middle of the day, when the sun shines warm, they should always be allowed to play about for an hour or two, and when the winter is spent, they should be turned into some dry ground where the grass is sweet and short, and where there is good water, that they may drink at pleasure. The winter after this, they may be kept in the stable without any further care than that which is taken of other horses; but after the first year, the mare foals and horse foals are not to be kept together. There is no difficulty to know the shape a foal is like to be of; for the same shape he carries at a month, he will carry at six years old, if he be not abused in after keeping. As for his height, it is observed that a large thin bone, long from the knee to the pastern, shews a tall horse; for which another way is to see what space he has between his knee and his withers, which being doubled, it will be his height when he is a full aged horse. There are also means of knowing their goodness: for if they are of stirring spirits,* free from frights, wanton of disposition, and very active in leaping and running, and striving for mastery, they prove generally good mettled horses. It is a good mark also if their hoofs be strong, deep, tough, smooth, upright standing, and hollow. For the manner of breaking them. See *Horse*.

FOCUS, in geometry and conic sections, is applied to certain points in the parabola, wherein the rays reflected from all parts of these curves meet and concur.

FOCUS of an Hyperbola is that point in the axis through which the latus rectum passes.

FOCUS of a Parabola is that point in the axis wherein the semi-ordinate is equal

to the semi-parameter; or it is that point through which the latus rectum passes.

FOCUS, in optics, the point wherein the rays are collected, after they have undergone refraction. See *Mirror* and *Lens*.

It is so called because the sun's rays being united within a very small compass or circle, are greatly constricted and condensed; by which means their action or heat is proportionally increased, and therefore objects posited in that point will be greatly heated, burnt, or melted.

Virtual FOCUS, in dioptrics, the point from which refracted rays, when they are rendered divergent by refraction, begin to diverge.

FODDER, any kind of meat for horses, or rather cattle. In some places, hay and straw, mingled together, is peculiarly denominated fodder.

FOECUNDITY, or **FECUNDITY**, the same with fertility.

FOENICULUM DULCE, sweet fennel, it is annual, a native of the warmer climates; and cultivated in our gardens. The shops are commonly supplied, from Germany, with seeds, superior to those of our own growth. Sweet fennel seeds are an useful stomachic and carminative, of an agreeable aromatic smell, and a moderately warm sweetish taste. They are sometimes given in powder, from a scruple to a dram; and sometimes candied.

FOENICULUM VULGARE, common fennel, it is perennial, a native of some of the southern parts of Europe, and cultivated in our gardens. The seeds of these species are warmer and more pungent, but less sweet, and of a less grateful flavour than those of the preceding; and the same difference obtains in the distilled waters, distilled oils, and the spirituous extracts of the two kinds.

The roots, taken up early in the spring, have a pleasant sweetish taste, with a slight aromatic warmth; but nothing of the peculiar strong flavour of the leaves and seeds. They are ranked among the aperient roots, and supposed by some to be equivalent in virtue to the celebrated ginseng of the Chinese, from which however they differ considerably in their sensible qualities. See *Ginseng*.

FOENUGREEK, *Fœnum Græcum*, in botany, a plant which is sown annually in the southern parts of Europe, from whence the seeds are brought to us.

FOETOR, in medicine, stinking or foetid effluvia, arising from the body, or any part thereof.

FOETUS, in physiology, the child while

while it is contained in the mother's womb, but particularly after it is formed, till which time it is more properly called embryo.

Formation of a FOETUS. The formation of the bones in a foetus, is very gradually and regularly performed. In the first two months, there is nothing of a bony nature in the whole. After this, the hardness of the parts, where the principal bones are to be situated, becomes, by degrees, perceptible. In the first stages, every thing is membranous, where the bones are to be: these, by degrees transmute into cartilages; and from these, by the same sort of change continued, the bones themselves are by degrees formed. All this is done by nature, by such slow though such certain progressions, that the nicest eye can never see it doing, though it easily sees it when done.

Mauriceau, pretends, that the increase of a foetus is sixty four times its own weight in triple the time. Thus, he says, that, at the birth, a child weighs twelve pounds, of sixteen ounces each; at the three months, it weighs three ounces; at one month, $\frac{3}{8}$ ths of a drachm; and at ten days less than half a grain.

FOG, or MIST, a meteor, consisting of gross vapours, floating near the surface of the earth. If the vapours, which are raised plentifully from the earth and waters, either by the solar or subterraneous heat, do, at their first entrance into the atmosphere, meet with cold enough to condense them to a considerable degree, their specific gravity is, by that means, increased; and so they will be stopt from ascending, and return back, either in form of dew, or drizzling rain; or remain suspended some time in the form of a fog. Vapours may be seen on the high grounds as well as the low, but more especially about marshy places: they are easily dissipated by the wind, as also by the heat of the sun: they continue longest in the lowest grounds, because these places contain most moisture, and are least exposed to the action of the wind. Hence we may easily conceive, that fogs are only low clouds, or clouds in the lowest region of the air; as clouds are no other than fogs, raised on high. See *Cloud*.

When fogs sink, then the vapours are mixed with sulphureous exhalations, which smell so. Objects viewed through fogs, appear larger and more remote than through the common air. Mr. Boyle observes, that upon the coast of Coromandel,

and the most maritime parts of the East-Indies, there are, notwithstanding the heat of the climate, annual fogs so thick, as to occasion those of other nations who reside there, and even the more tender part of the natives, to keep their houses close shut up.

FOIL, among glass-grinders, a sheet of tin, with quicksilver or the like, laid on the backside of a looking-glass, to make it reflect.

FOIL, among jewellers, a thin leaf of metal placed under a precious stone, to make it look transparent and give it an agreeable different colour, either deep or pale: thus, if you want a stone to be made of a pale colour, put a foil of that colour under it; or if you would have it deep, lay a dark one under it.

These foils are made either of copper, gold, or gold and silver together: the copper foils are commonly known by the name of Nuremberg or German foil.

FOLIATING of Looking-Glasses is performed by fixing quicksilver on the reverse surface, by means of plates of tin; which amalgamating or combining with the quicksilver, takes away its fluidity, and renders it so tenacious, as to be compressed into a very thin coat or plate, capable of adhering to the surface of the glass.

There are several manners of laying the quicksilver and tin on the glass; and it is by some practised, to use the quicksilver alone; and by others, to compound with it tin and lead; and bismuth has likewise been frequently used instead of them: but it is not necessary, when the operation is well conducted, to make any addition to the quicksilver.

FOLIATION, a term used by some botanists to denote the corolla, or flower-leaves.

FOLIO, in merchant books, denotes a page, or rather both the right and left hand pages, these being expressed by the same figure, and corresponding to each other. See *Book-Keeping*.

FOLIO, among printers and booksellers, the largest form of books, when each sheet is printed, that it may be bound up in two leaves only.

FOMAHANT, or FOMALHANT, in astronomy, a star of the first magnitude in Aquarius, whose latitude is $29^{\circ} 19' 11''$. north, and longitude $27^{\circ} 23' 24''$. of Capricornus, according to Mr. Flamsteed's catalogue.

FOMENTATION, in medicine, the same with a liquid epithema, if applied hot; and is the bathing of any part of the

the body in a proper liquor, commonly made by a decoction of herbs in water, wine, milk, &c. being generally applied by means of stupes or doubled flannels, dipped in the medicated decoction, and all the liquor, if very hot, expressed out of them, lest it should scald the part, raise blisters, &c.

FONT, among the ecclesiastical writers, a large basin, in which consecrated water is kept for the baptizing of infants, or other persons. It is so called probably because baptism was usually performed among the primitive Christians at springs or fountains.

* FONTENOY, Battle of, April 30, 1748. Though the French king could not prevent the elevation of the grand duke to the Imperial throne, he resolved to humble the house of Austria, by making a conquest of the Netherlands. A prodigious army was now assembled, under the auspices of marshal count de Saxe; and his most christian majesty, with the dauphin, arriving in the camp, they invested the strong town of Tournay on the thirtieth day of April. The Dutch garrison consisted of eight thousand men, commanded by the old baron Dorth, who made a vigorous defence. The duke of Cumberland assumed the chief command of the allied army assembled at Soignies; and he was assisted with the advice of count Konigsfeg an Austrian general, and the prince of Waldeck, commander of the Dutch forces. Their army was greatly inferior in number to the enemy; nevertheless, they resolved to march to the relief of Tournay. They accordingly advanced to Leuse; and on the twenty-eighth day of April took post at Maulbere, in sight of the French army, which was encamped on an eminence from the village of Antoine to a large wood beyond Vezon, having Fontenoy in their front. Next day was employed by the allies in driving the enemy from some outposts, and clearing the defiles through which they were obliged to advance to the attack; while the French completed their batteries, and made the most formidable preparations for their reception. On the thirtieth day of April the duke of Cumberland having made the proper dispositions, began his march to the enemy at two o'clock in the morning: a brisk cannonade ensued; and about nine both armies were engaged. The British infantry drove the French beyond their lines; but, the left wing failing in the attack on the village of Fontenoy and the cavalry forbearing to advance on the

flanks, they measured back their ground with some disorder, from the prodigious fire of the French batteries. They rallied, however, and returning to the charge with redoubled ardour, repulsed the enemy to their camp with great slaughter; but, being wholly unsupported by the other wing, and exposed both in front and flank to a dreadful fire which did great execution, the duke was obliged to make the necessary dispositions for a retreat about three o'clock in the afternoon; and this was effected in tolerable order. The battle was fought with great obstinacy, and the carnage on both sides was very considerable. The allies lost about twelve thousand men, including a good number of officers; and among these lieutenant general Campbell, and major general Ponsonby. The victory cost the French almost an equal number of lives; although the attack was generally judged rash and precipitate, the British and Hanoverian troops fought with such intrepidity and perseverance, that if they had been properly sustained by the Dutch forces, and their flanks covered by the cavalry, the French in all likelihood, would have been obliged to abandon their enterprize. The duke of Cumberland left his sick and wounded to the humanity of the victors; and retiring to Aeth, encamped in an advantageous situation at Lessines. The garrison of Tournay, though now deprived of all hope of succour, maintained the place to the twenty-first day of June, when the governor obtained an honourable capitulation. After the conquest of Tournay, which was dismantled, the duke of Cumberland apprehending the enemy had a design upon Ghent, sent a detachment of four thousand men to reinforce the garrison of that city; but, they fell into an ambuscade at Pas-du-mele; and were killed or taken, except a few dragoons that escaped to Ostend: on that very night, which was the twelfth of June, Ghent was surprized by a detachment of the French army. Then they invested Ostend, which, though defended by an English garrison, and open to the sea, was after a short siege surrendered by capitulation on the fourteenth day of August. Dendermonde, Ourdenarde, Newport, and Aeth, underwent the same fate; while the allied army lay intrenched beyond the canal of Antwerp: And the French king having subdued the greatest part of the Austrian Netherlands, returned to Paris, which he entered in triumph.

FONTICULUS, or **FONTANELLA**, in surgery, an issue, seton, or small ulcer made in various parts of the body, in order to eliminate the latent corruption out of it.

FOOD, aliments taken into the body, to nourish it. See *Diet, Drink, Aliment, &c.*

FOOT, *Pes*, a part of the body of most animals whereon they stand, walk, &c.

FOOT, *Pes Magnus*, or great foot, in anatomy, denotes the extent from the juncture of the hip to the toe ends; but the foot, or lesser foot properly so called, is divided into three parts, that is tarsus, metatarsus, and toes.

The tarsus is the space between the bones of the leg and the metatarsus; it is composed of seven bones. The first is called astragalus or talus. The second calcaneum, or calcis, or heel-bone; it is the largest of the bones of the tarsus. The third is the os naviculare or cymbiforme. The fourth fifth and sixth are called ossa cuneiformia, because they are large above, and narrow below. The seventh bone os cubiforme, because of its figure.

The bones of the metatarsus are five; that which sustains the great toe is the thickest, and that which sustains the next toe is the longest, and the rest grow each shorter than the other. They are longer than the bones of the metacarpus; in other things they are like them, and they are articulated to the toes, as they are to the fingers.

The bones of the toes are fourteen. The great toe has two, and the rest have three; they are like the bones of the fingers, only they are shorter.

In the toes there are sometimes found twelve ossa modica, as in the fingers.

FOOT, in the Latin and Greek poetry, a metre or measure, composed of a certain number of long and short syllables. These feet are commonly reckoned twenty-eight, of which some are simple, as consisting of two or three syllables, and therefore called disyllabic or trisyllabic feet; others are compound, consisting of four syllables, and are therefore called tetrasyllabic feet.

FOOT, a long measure, consisting of 12 inches. See *Inch*. Geometricians divide the foot into 10 digits, and the digit into 10 lines.

FOOT Square is the same measure, both in breadth and length, containing 144 square or superficial inches.

Cubic or Solid FOOT is the same measure in all the three dimensions, length, breadth, and depth or thickness, containing 1728 cubic inches.

FORAMEN, in anatomy, a name given to several apertures, or perforations in divers parts of the body; as, 1. The external and internal foramina of the cranium or skull. 2. The foramina in the upper and lower jaw. 3. Foramen lachrymale. 4. Foramen membranæ tympani.

FORAMEN OVALE, an oval aperture or passage through the heart of a fœtus, which closes up after birth.

FORCE of Bodies in Motion. It has been a famous dispute among the philosophers, "Whether the force of bodies in motion, striking each other, be proportional to the simple velocity of the motion, or to the square of the velocity?" The English and French maintain the former, the Dutch and Germans the latter.

This dispute first commenced between Mr. Huygens and the abbot Catalan, about the force of oscillating bodies; it continued some time between these two gentlemen; at length, another subject of the same kind engaged the said abbot with the famous Leibnitz, who is to be esteemed the first author that plainly declared, in express words, "That the forces of bodies were as their masses multiplied by the square of the velocity."

Catalan, and afterward Mr. Papin, answered Leibnitz; he replied again, and several papers were written on the subject. It then became a matter of general enquiry, and the philosophers of every nation began to consider which side to be of, and whether they should declare for the old or for the new opinion. However, they did here, as they do in religion, go by a whole nation together; the common herd of philosophers following the dictates of their leaders. Thus Leibnitz, Polenus, s'Gravesande, and all Muschenbroek led the German and Dutch; Papin, Mairan, &c. the French; and Pemberton, Eames, Desaguliers, Clarke, &c. the English.

As it usually falls out in other cases, so here, when men find themselves pressed with difficulties and absurdities in their schemes and notions, they have recourse to the subtilties of metaphysical distinctions, though seldom to any good purpose. Thus when it appears too plainly by all experiments, and even to common sense, that the natural force of bodies was proportional to the simple velocity and mass of matter conjointly; we were told it was necessary to distinguish the force of bodies into two kinds, viz. the vis viva or living force, and the vis mortua, or the dead force, but it

F O R

it was demonstrated, these distinctions would not mend the matter.

FORCE, in law, any unlawful violence offered to things or persons.

FORCEPS, in surgery, &c. an instrument well known, of which there are several sorts, adapted to various operations. Their uses are to lay hold of any thing and extract it from the body.

FORCER, or **FORCING PUMP**, in mechanics, a kind of pump in which there is a forcer or piston, without a valve. See *Pump*.

FORCING, among gardeners, the making of trees produce ripe fruit before their usual time. This is done by planting them in a hot bed against a south wall, and likewise defending them from the injuries of the weather by a glass frame.

FORE-CASTLE, in ship-building, a short deck which reaches from the top of the stem to the after part of the fore throuds.

FORE-CLOSED, in law, signifies the being shut out, and excluded, or barred, the equity of redemption on mortgages, &c.

FOREIGN, in general, is applied to a person born in some other prince's dominions, or any thing brought from thence, and is opposed to native. In physic it is applied to any preternatural substance, either from without, or generated internally in the human body.

FOREIGN Apposer, or *Opposer*, an officer in the court of Exchequer, to whom all sheriffs and bailiffs repair to be apposed by him of their green wax, after they have been apposed of their sums out of the Pipe-Office; and from thence he draws down a charge upon one of them to the clerk of the Pipe. His business is also to examine the sheriff's estreats with the record, and to ask the sheriff what he says to every particular sum therein.

FOREIGN Plea, a refusal of the judge as incompetent, because the matter in hand was not within his precinct.

FOREIGNER, the natural born subject of some foreign prince.

FORE-JUDGED, in law, signifies a judgment, whereby one is deprived, or put by a thing in question.

FORELAND, in the sea-language, the same with a cape. See *Cape*.

FORE-MAST. See the article *Mast*.

FOREST, *Sylva*, in general, a great wood, or a large extent of ground covered with trees.

ORE-STAFF, or **CROSS-STAFF**,

F O R

a mathematical instrument formerly used to take the sun's altitude.

FORESTALLER, one who is guilty of forestalling.

FORESTALLING, in law, buying or bargaining for any corn, cattle, victuals, or merchandize, in the way as they come to fairs or markets to be sold, before they get thither, with an intent to sell the same again at a higher price.

FORE-TOP-MAST. See *Top-Mast*.

FORFEITURE, the effect of transgressing some penal law, and extends to lands or goods. Forfeiture differs from confiscation, in that the former is more general, whilst confiscation is particularly applied to such things as are become forfeited to the king's exchequer; and goods confiscated, are said to be such as no person claims.

FORFICULA, the ear-wig, in zoology, a troublesome insect, which takes its English name from its introducing itself into people's ears, where it causes a great deal of pain.

FORGE, a little furnace, wherein smiths, and other artificers of iron or steel, &c. heat their metals red hot, in order to soften and render them more malleable and manageable on the anvil. See *Furnace*.

FORGE is also used for a large furnace, wherein iron ore, taken out of the mine, is melted down; or it is more properly applied to another kind of furnace wherein the iron-ore, melted down and separated in a former furnace, and then cast into sows and pigs, is heated and fused over again, and beaten afterwards with large hammers, and thus rendered more soft, pure, ductile, and fit for use. Of these there are two kinds: the first is called the finery, where the pigs are worked into gross iron, and prepared for the second, which is called the chafery, where it is further wrought into bars fit for use.

FORGERY, in a legal sense, is the fraudulently making and publishing false writings to another's prejudice: or it signifies the writ that lies against him who offends that way.

Forgery is either at common law, or by statute; and is an offence punishable by indictment, information, &c. and not only where a person makes a false deed, but where any fraudulent alteration is made of a true one, in a material point. Likewise a writing may be said to be forged, where one being directed to draw up a will for another, inserts some legacies falsely of his

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F O R

own head; though in such cases, there is no forgery of the hand or seal of the party: but a person cannot regularly be guilty of this crime by an act of omission, unless it alters the limitation of an estate to another, in which case it may be forgery. By a statute of George II. c. 25. the forging or counterfeiting any deed, will, bond, bill, note, &c. with an intent to defraud any person, or publish such false deed, bond, &c. knowingly, is declared to be felony: and the offender shall suffer death.

FORGING, in smithery, the beating or hammering iron on the anvil, after having first made it red-hot in the forge, in order to extend it into various forms, and fashion it into works. See *Forge*.

There are two ways of forging and hammering iron; one is by the force of the hand, in which there are usually several persons employed, one of them turning the iron and hammering likewise, and the rest only hammering. The other way is by the force of a water-mill, which raises and works several large hammers beyond the force of men; under the strokes of which the workmen present large lumps, or pieces of iron, which are sustained at one end by the anvils, and at the other by iron chains fastened to the ceiling of the forge. See *Mill*.

This last way of forging is only used in the largest works, as anchors for ships, &c. which usually weigh several thousand pounds. For lighter works, a single man serves to hold, heat, and turn with one hand, while he hammers with the other.

FORM, *Forma*, in physics, the essential or distinguishing modification of the matter whereof a natural body is composed.

FORMS of Syllogisms, or *Syllogistic FORM*, among the logicians a disposition wherein the conclusion follows duly and legitimately from the two premises, there being no form where there is no conclusion. See *Syllogism*.

FORM, in theology, is said to be one of the essential parts of the sacraments; being that which gives them their sacramental nature and efficacy, and consisting in certain words, which the priest pronounces in administering them,

FORM is also used in a moral sense, for the manner of being, or doing a thing according to rules; thus we say, a form of government, a form of argument, &c.

FORM, in law, the rules established and requisite to be observed in legal proceedings.

F O R

FORM, in carpentry, a long seat or benches in the choirs of churches, or in schools; for the priests, prebendaries, religious, or scholars, to sit on.

At schools, the word form is frequently applied to what is otherwise termed a class. See *Class*.

FORM also denotes the external appearance or surface of a body, or the disposition of its parts, as to the length, breadth, and thickness.

FORM is also used among mechanics; for a sort of mould, whereon any thing is fashioned or wrought; as the hatters form, the paper-maker's form, &c.

Printer's FORM, an assemblage of letters, words, and lines, ranged in order, and so disposed into pages by the compositor, from which, by means of ink and a press, the printed sheets are drawn.

FORMA PAUPERIS, in law, is where a person has just cause of suit, but is so poor that he cannot defray the usual charges of suing at law or in equity; in which case, on making oath that he is not worth five pounds in the world, on all his debts being paid, and producing a certificate from some lawyer that he has good cause of suit, the judge will admit him to sue in forma pauperis; that is, without paying any fee to counsellors, attorneys, clerks, &c.

FORMATION, in philosophy, an act whereby something is formed or produced.

FORMATION, in grammar, the forming one word from another; thus account-antship is formed from accountant, and this last from account.

FORMICA, the ant in zoology. See *Ant*.

FORMICA-LEO, the ant-lion, or ant-eater, in zoology, an insect so called from its devouring great numbers of ants. It is the caterpillar or worm of a fly, much resembling the liberellæ, or dragon-flies.

FORMING the line, in naval affairs, the drawing up the ships of a squadron or division in a straight line, about an hundred and twenty fathoms distance from each other.

FORMULA, or **FORMULARY**, a rule or model, or certain terms prescribed by authority, for the form and manner of an act, instrument, proceeding or the like.

FORMULA, in medicine, imports the constitution of medicines, either simple or compound, both with respect to their prescription and consistence.

FORNICATION, the act of incontinency between single persons; for when either of the parties is married, such act is adultery.

FOR.

FORNIX, in anatomy, a part of the brain placed under the septum lucidum, and, like it, composed of a medullary substance.

FORRAGE, in the military art, denotes hay, oats, barley, wheat, grass, clover, &c. brought into the camp by the troopers, for the sustenance of their horses. Dry forrage is the hay, oats, &c. delivered out of the magazines, to any army in garrison, or when they take the field, before the green forrage is sufficiently grown up to supply the troops.

FORT, in the military art, a small fortified place, environed on all sides with a moat, rampart, and parapet. Its use is to secure some high ground, or the passage of a river, to make good an advantageous post, to defend the lines and quarters of a siege, &c.

Royal FORT, one whose line of defence is at least twenty-six fathoms long.

FORTIFICATION, the art of fortifying a town, or other places; or of putting them in such a posture of defence, that every one of its parts defends, and is defended by some other parts, by means of ramparts, parapets, moats, and other bulwarks; to the end, that a small number of men within may be able to defend themselves for a considerable time against the assaults of a numerous army without, so that the enemy, in attacking them, must of necessity suffer great loss. Fortification is either ancient or modern, regular or irregular. Ancient fortification, at first, consisted of walls or defences made of trunks, and other branches of trees, mixed with earth, to secure them against the attacks of the enemy. This was afterwards altered to stone-walls, on which were raised breast-works, behind which they made use of their darts and arrows in security. Modern fortification, is that which is flanked and defended by bastions and out-works, the ramparts of which are so solid, that they cannot be beat down but by the continual fire of several batteries of cannon.

Regular fortification, is that built in a regular polygon, the sides and angles of which are all equal, being commonly about a musket-shot from each other.

Irregular fortification, on the contrary, is that where the sides and angles are not uniform, equidistant, or equal; which is owing to the irregularity of the ground, valleys, rivers, hills, and the like. See *Bastion*, &c.

The principal maxims of fortification

VOL. II.

are these: 1. That every part of the works be seen and defended by other parts, so that the enemy can lodge no where without being exposed to the fire of the place. 2. A fortress should command all places round it; and therefore all the out-works ought to be lower than the body of the place. 3. The works farthest from the center, ought always to be open to those more near. 4. No line of defence should exceed a point blank musket-shot, which is about an hundred and twenty or an hundred and twenty-five fathoms. 5. The more acute the angle at the center is, the stronger will be the place. 6. In great places, dry trenches are preferable to those filled with water, because sallies, retreats, and succours are frequently necessary, but, in small fortresses, water-trenches that cannot be drained, are best, as standing in need of no sallies, &c.

Different authors recommend different methods of fortification; but the principal are those of Pagan, Blondel, Vauban, and Scheiter.

Irregular FORTIFICATIONS, are those raised about irregular polygons; in which the engineer ought to follow, as much as possible, the proportions laid down for the regular one.

FORTISSIMO, in music, sometimes denoted by F F F, or *fff*, signifies to sing to play very loud or strong.

FORTUNE, *Fortuna*, a goddess worshipped with great devotion by the ancient Greeks and Romans, who believed her to preside over human affairs, and to distribute wealth and honour at her pleasure.

FORUM, in Roman antiquity, a public standing place within the city of Rome, where causes were judicially tried, and orations delivered to the people.

FOSSA MAGNA, the interior cavity, or rima magna, of the pudendum muliebre.

FOSS, in fortification, a hollow place, commonly full of water, lying between the scarp and counterscarp, below the rampart; and turning round a fortified place or post that is to be defended. See *Moat*.

FOSIL, in natural history, denotes, in general, every thing dug out of the earth, whether they be natives thereof, as metals, stones, salts, earths, and other minerals; or extraneous, reposed in the bowels of the earth by some extraordinary means, as earthquakes, the deluge, &c.

FOUL, in the sea language, entangled or embarrassed: foul anchor, i. e. an anchor which has either hooked its own or

some other cable, wreck, rocks, &c. "a ship ran foul of us in the night." i. e. came close to our ship, entangled herself among the rigging.

FOUL-HAWSE is when the ship being moored by two anchors, has turned round, and consequently twisted one cable about the other.

FOUL-WIND, a wind which blows contrary to the ship's course.

FOULNESS, in surgery, a term applied to wounds, where the flesh is putrid, fungous, black, or livid.

FOUNDATION, in architecture, that part of a building which is under ground. See *Building*.

Foundations are either natural or artificial. Natural as when we build upon a rock, or very solid earth, in which case we need not seek for any further strengthening; for these, without digging or other artificial helps, are of themselves fit to uphold the greatest buildings. But if the ground be sandy, or marshy, or hath lately been dug, recourse must be had to art. If the ground be sandy or marshy, you must dig till you find found ground, and the best is that which requires most labour in cutting, and when wet, does not dissolve into dirt. If the earth to be built upon is very soft, as in moorish grounds, lay good pieces of oak, whose length must be about the breadth of the trench, or two feet longer than the breadth of the wall, across the foundation, about two feet asunder, and being well rammed down, lay long planks upon them, pinning or spiking down each plank to the pieces of oak on which it lies. But if the ground be very bad, let piles of oak, of a diameter about one twelfth part of their length, be drove down to reach the good ground, and placed as close as one can stand by another; then spike down long planks upon them. And it must not be forgot to place the piles not only under the outer walls, but also under the inner walls that divide the building; for if these should sink, it would make the outer wall crack, and so ruin the whole building. If the ground be faulty here and there, let arches be turned over the faulty places which will discharge them of the weight. As to the rules necessary to be observed in the substruction or artificial part of the foundation, they are these, 1. That the bottom of the trench be made exactly level. 2. That the lowest ledge or row be all of stone (the broader the better) laid close together. 3. That the breadth of the ground-work be at least double that of the wall to be raised on it. However, the

breadth may be regulated according to the goodness of the ground, and the weight of the intended edifice. 4. That the foundation be made to diminish as it rises, taking care, however, that it do so equally on both sides. 5. That you ought never to build on the ruins of an old foundation, unless well assured of its depth and strength to bear the superstructure. 6. And lastly, The stones in a foundation, should be laid as they naturally lay in the quarry; a precept generally observed by all good architects, because they find the stones are subject to cleave that way of the grain, that lay horizontally in the quarry. In some places, buildings near the water are founded on sacks of wool laid like mattresses, which being well pressed and greasy, will never give way, nor rot in the water.

FOUNDATION, a donation or legacy either in money or lands, for the maintenance and support of some community, hospital, school, lecture, &c.

FOUNDER, in a general sense, the person who lays a foundation, or endows a church, school, religious house, or other charitable institution. The founder of a church may preserve to himself the right of patronage, or presentation to the living.

FOUNDER, an artist who casts metals, in various forms, for different uses, as guns, bells, statues, printing characters, candlesticks, buckles, &c. whence they are denominated gun-founders, bell-founders, figure-founders, letter-founders, founders of small works, &c. See *Foundery*.

FOUNDING, in the manege, a disorder in horses, of which there are two kinds, viz. in the feet and in the chest. Foundering in the feet, is an universal rheumatism, or defluxion of humours upon the sinews of a horse's feet, which causes so great a stiffness in the hoofs, that the horse has no sense or feeling of them.

This disorder arises from hard riding; from great heats and colds; and is sometimes occasioned by watering a horse when he is very hot, by which means, as the farriers term it, his grease is melted within him; also by wearing too straight a shoe, or travelling upon hard ground.

FOUNDING, among sailors, sinking in a storm at sea.

FOUNDERY, or **FOUNDRY**, the art of casting all sorts of metals, into different forms. It likewise signifies the work-house, or smelting-hut, wherein these operations are performed.

FOUNDERY of Bells. The metal, it is to be observed, is different for bells from what it is for statues; there being no tin in the

the statue-metal; but there is a fifth, and sometimes more, in the bell-metal.

The business of bell-foundry is reducible to three particulars: 1. The proportion of a bell; 2. The forming of the mould; and 3. The melting of the metal.

The proportions of the English bells differ much from those of the Chinese: in the former, the modern proportions are to make the diameter fifteen times the thickness of the brim, and twelve times the height.

There are two kinds of proportions, viz. the simple and the relative; the former are those proportions only that are between the several parts of a bell, to render it sonorous; the relative proportions establish a requisite harmony between several bells.

The particulars necessary for making the mould of a bell, are, 1. The earth: the most cohesive is the best: it must be well ground, and sifted, to prevent any chinks. 2. Brick-stone; which must be used for the lining, mould, or core for the furnace. 3. Horse-dung, hair, and hemp, mixed with the earth, to render the cement more binding. 4. The wax for inscription, coats of arms, &c. 5. The tallow equally mixed with the wax, in order to put a slight lay of it upon the outer mould, before any letters are applied to it. 6. The coals to dry the mould.

For making the mould, they have a scaffold consisting of four boards, ranged upon tressels. Upon this, they carry the earth, grossly diluted, to mix it with horse-dung, beating the whole with a large spatula.

The compasses of construction is the chief instrument for making the mould, which consist of two different legs, joined by a third piece. And last of all, the founders shelve, on which are the engravings of the letters, cartridges, coats of arms, &c.

FOUNDRY of great Guns, and Mortar-Pieces. The method of casting these pieces is little different from that of bells: they are run massy, without any core, being determined by the hollow of the shell; and they are afterwards bored with a steel trepan, that is worked either by horses, or a water-mill.

For the metal, parts, proportions, &c. of these pieces, see *Cannon*.

Letter FOUNDRY, or Casting of Printing-Letters. The first thing requisite is to prepare good steel punches, on the face of which is drawn the exact shape of the letter with pen and ink, if the letter be large, or with a smooth blunted

point of a needle, if small; and then with proper gravers, the cutter digs deep between the strokes, letting the marks stand on the punch: the work of hollowing being generally regulated by the depth of the counter-punch: then he files the outside, till it is fit for the matrice.

They have a mould to justify the matrices by, which consists of an upper and under part, both which are alike, except the stool and spring behind, and a small roundish wire in the upper part, for making the neck in the flank of the letter. These two parts are exactly fitted into each other, being a male and female gage, to slide backwards and forwards.

Then they justify the mould, by casting about twenty samples of letters, which are set in a composing-stick, with the nicks towards the right-hand; and comparing these every way with the pattern-letters; set up in the same manner, they find the exact measure of the body to be cast.

Next they prepare the matrix, which is of brass or copper, an inch and a half long, and a proportionable thickness to the size of the letter it is to contain. In this metal is sunk the face of the letter, by striking the letter-punch the depth of an *n*. After this, the sides and face of the matrix are justified, and cleared, with files, of all bunnings that have been made by sinking the punch.

Then it is brought to the furnace, which is built up-right of brick with four square sides, and a stone a top, in which is a hole for the pan to stand in. They have several of these furnaces.

Printing-letters are made of lead, hardened with iron or stub-nails. To make the iron-run, they mingle an equal weight of antimony, beaten small in an iron mortar, and stub-nails together. They charge a proper number of earthen pots, that bear the fire, with the two ingredients, as full as they can hold, and melt it in an open furnace, built for that purpose.

A workman will ordinarily cast 3000 of these letters in a day. The perfection of letters thus cast, consists in their being all severally square and straight on every side; and all generally of the same height, and evenly lined; without slooping one way or other; neither too big in the foot, nor the head; well grooved, so as the two extremes of the foot contain half the body of the letter; and well ground, barbed, and scraped, with a sensible notch, &c.

FOUNT, or **FONT**, among printers, a set or quantity of letters, and all the appendages belonging thereto, as numeral characters, quadrates, points, &c. cast by a letter-founder, and sorted. Founts are large or small, according to the demand of the printer. As every sheet does not comprehend the same number of letters, nor the same sort of letters, we must observe, that as in every language some sounds recur more frequently than others, some letters will be in much more use, and oftener repeated than others, and consequently their cells or cases should be better stored than those of the letters which do not recur so frequently: thus, a fount does not contain an equal number of *a* and *b*, or of *b* and *c*, &c. the letter-founders have therefore a list or tariff, or as the French call it, a *police*, by which they regulate the proportions between the different sorts of characters that compose a fount; and it is evident that this tariff will vary in different languages, but will remain the same for all sorts of characters employed in the same language.

FOUNTAIN, *Fons*, a spring of living water that rises out of the ground.

Fountains or sources of rivers were held sacred among the ancients, and even worshiped as a kind of divinity: and it was a point of religion, not to muddy the waters in bathing.

Artificial FOUNTAIN, or *jet d'eau*, a contrivance, whereby water is violently shot upwards. Some fountains are founded on the elasticity of the air, and others on the pressure of the water.

FOURTH, in music, one of the harmonic intervals. It consists in the mixture of two sounds, which are in the ratio of 4 to 3; that is, of sounds produced by chords, whose length are to each other as 4 to 3.

FOWL, among zoologists, the larger sort of birds, whether domestic or wild: such as geese, pheasants, partridges, turkeys, ducks, &c.

Tame fowl make a necessary part of the stock of a country farm. See *Poultry*.

FOX, *Vulpes*, in zoology, an animal of the dog-kind, which much resembles the common dog in form, and is of the size of a spaniel: it is chiefly distinguished by its long and straight tail, with the tip white.

FOX-GLOVE, *Digitalis*, in botany. See *Digitalis*.

FRACTION, in arithmetic, a broken number, a part, or division of an unit, or integer.

Fractions are generally divided into *vulgar*, *decimal*, and *sexagesimal*.

Vulgar FRACTIONS are those which represent the parts of any thing proposed.

A vulgar fraction is expressed by two numbers placed one above the other, having a line drawn between them.

The number placed below the line is called the denominator, and denotes how many equal parts the thing is supposed to be divided into, being only the divisor in division. And the number placed above the line is called the numerator, and shews how many of these parts are contained in the fraction, it being the remainder after division. These admit of three distinctions, viz. *proper* or *simple*, *improper*, and *compound* fractions.

A *proper*, *pure*, or *simple* Fraction is that which is less than an unit: that is, it represents the immediate part or parts of any thing less than the whole, and therefore its numerator is always less than the denominator.

An *improper Fraction* is that which is greater than an unit; that is, it represents some number of parts greater than the whole thing, and its numerator is always greater than the denominator.

A *compound Fraction* is a part of a part, consisting of several numerators and denominators united together with the word *of*. As 1-3d, of 3-4th, of 2-5ths, &c. and is thus read, one third of three fourths of two fifths of an unit.

That is, when an unit, or whole thing, is first divided into any number of equal parts, and each of these parts is subdivided into other parts, and so on: then these last parts are called compound fractions, or fractions of fractions.

All compound fractions are reduced to single ones, by the following

Rule—Multiply all the numerators into one another for a numerator, and all the denominators into one another for the denominator.

To alter or change different Fractions into one denomination retaining the same value.

In order to gain a clear understanding of this proposition, it will be convenient to premise this lemma, viz. If a number multiplying two numbers produce other numbers, the numbers produced of them shall be in the same proportion that the numbers multiplied are.

That is, if both the numerator and denominator of any fraction be equally multiplied into another number, their products will retain the same value with that fraction.

To bring mixed numbers into Fractions, and the contrary. Mixed numbers are brought into improper fractions by the following

Rule.—Multiply the integers, or whole numbers, with the denominator of the given fraction, and to their product add the numerator of the fraction required.

To abbreviate, or reduce Fractions into their lowest or least denomination.

Rule.—Divide the greater number by the lesser, and that divisor by the remainder, if there be any, and so on continually, until there be no remainder left: then will the last divisor be the greatest common measure; and, if it happen to be 1, then are those numbers prime numbers, and are already in their lowest terms; but, if otherwise, divide the numbers by that last divisor, and their quotients will be their least terms required.

Addition and subtraction of Fractions.

Rule.—Reduce them to a common denominator, and add or subtract the numerators; the sum or difference set over the common denominator is the sum or remainder required.

Multiplication of Fractions.

Rule.—Multiply their numerators one into another to obtain the numerator of the product; and their denominators multiplied into one another shall give the denominator of the product.

If a mixed quantity is to be multiplied, first reduce it to the form of a fraction, and if any integer is to be multiplied by a fraction, you may reduce it to the form of a fraction by placing a unit under it.

Division of Fractions.

Rule.—Multiply the numerator of the dividend by the denominator of the divisor, and their product shall give the numerator of the quotient: then multiply the denominator of the dividend by the numerator of the divisor, and their product shall give the denominator.

FRACTURE, in surgery, a rupture of a bone; or a solution of continuity in a bone, when it is crushed or broken by some external cause.

FRÆNUM, in anatomy, a term applied to some membranous ligaments of the body. As,

FRÆNUM LINGUÆ, the ligament under the tongue; which sometimes ties it down too close to the bottom of the mouth, and then requires to be incised or divided, in order to give this organ its proper and free motion. This disorder generally arises in infants soon after their birth, so that they cannot move and

exert their tongues in the action of sucking: though it is sometimes also observed in adults.

Each of the lips has also its peculiar frænum: the upper one under the nose; the under one near the roots of the dentes incisores: these are of the utmost service to us in speaking, and eating and drinking.

FRÆNUM PENIS, a ligament of the penis, that ties the prepuce to the lower part of the glands of the penis.

There is also a small frænum of the clitoris, by which it is connected to the ossa pubis.

FRAGARIA, the strawberry, in botany.

FRAIL, a basket made of rushes, or the like, in which are packed up figs, raisins, &c. it also signifies a certain quantity of raisins, about seventy-five pounds.

FRAISE, in fortification, a kind of defence, consisting of pointed stakes, six or seven feet long, driven parallel to the horizon into the retrenchments of a camp, a half-moon, or the like, to prevent any approach or scalade.

To **FRAISE a Battalion**, is to line the musqueteers round with pikes, that, in case they should be charged with a body of horse, the pikes being presented, may cover the musqueteers from the shock of the horse, and serve as a barricade.

FRAME, in joinery, a kind of case, wherein a thing is set or inclosed, or even supported, as a window-frame, a picture frame, &c.

FRAME is also a machine used in divers arts; as,

FRAME, among printers, is the stand which supports the cases.

FRAME, among founders, a kind of ledge inclosing a board, which, being filled with wetted sand, serves as a mould to cast their works in.

FRAME is more particularly used for a sort of loom, whereon artificers stretch their linens, silks, stuffs, &c. to be embroidered, quilted, or the like.

FRAME, among painters, a kind of square, consisting of four long slips of wood joined together, whose intermediate space is divided by threads into several little squares like a net. It serves to reduce figures from great to small; or, on the contrary, to augment their size from small to great.

FRAMING of an House, among carpenters, denotes all the timber work therein; namely, the carcase, flooring, partitioning, roofing, cieling, beams, athlerring, &c.

*FRANCE,

* **FRANCE**, a kingdom of Europe, bounded on the north by the Low Countries; on the east by Germany, Switzerland, Savoy, and the Alps; on the south by the Mediterranean Sea and the Pyrenean mountains, which separates it from Spain; and on the west by the ocean. It is in length from Dunkirk, to Roussillon, seven hundred and twenty miles; and in breadth six hundred and sixty. The Roman Catholic religion is only allowed since the revocation of the edict of Nantz in 1685.

The kingdom of France, of which we are now treating, is very ancient, having continued since the year 425, which is above thirteen centuries. The number of kings from the first foundation of this monarchy to the present time, is sixty-five; that is, twenty-two of the first race, thirteen of the second, and thirty-one of the third, including Lewis XV. now reigning. The first were called Merovingians, the second, Carolingians, and the other, Capetians. This kingdom contains twenty-one universities, eighteen archbishopricks, one hundred and twelve bishopricks, twelve boards of accounts, twelve courts of aides, two courts and thirty hotels belonging to the mints, three supreme councils, besides the grand council, as will be mentioned more particularly hereafter. The air of France is very temperate and healthful, being in the middle of the temperate zone, and the land is agreeably diversified with rising hills, beautiful valleys, vast plains, and is generally cultivated throughout the whole kingdom. The rivers are, the Loire, the Seine, the Rhone, and the Garonne, besides several lesser rivers which will be taken notice of when the provinces are particularly described. The ports, havens, or harbours of France, are seventeen, namely, 1. Dunkirk, and, 2. Gravelines in Flanders; 3. Calais in Picardy; 4. Dieppe, and, 5. Havre, in Normandy, 6. St. Malo, 7. Brett, and, 8. L'Orient, at which last the ships for the Indies put in; 9. Port Lewis, in Britany, 10. Rochelle, in the territory of Aunis, which receives the vessels that come from America; 11. Rochfort, 12. Bourdeaux, 13. Bayonne, and, 14. St. John de Luz, in Guienne; on the Mediterranean there are, 15. Cette, in Languedoc, 16. Toulon, and 17. Marseilles in Provence.

The king of France has the title of the most Christian king, and eldest Son of the Church, notwithstanding which, there have been several quarrels between him and

the pope. Besides, there have been divisions in the Gallican church itself. That which now exists, was occasioned by the bull Unigenitus, in which pope Clement XI. condemns one hundred and one propositions in the New Testament of P. Queinell. Those who oppose this bull are called Jansenists, because they follow the sentiments of Cornelius Jansenius, bishop of Ypres, in Flanders, who died in 1638. Great numbers of the clergy have thought proper to refuse the sacrament to the Jansenists, which has occasioned great disputes.

Though the religion now professed in France is only the Roman Catholic, yet there were formerly a great number of Protestants called Hugonots. These were tolerated by the famous edict of Nantz, made by Henry IV. in their favour in 1597. Before this edict, they were determined to root the reformed out of the kingdom, and this gave rise to the civil wars, which did so much mischief in that kingdom, and occasioned the dreadful massacre at Paris in 1572, on the night of St. Bartholomew, when thirty thousand of the principal Protestants were murdered in cold blood. After the promulgation of the famous edict, the Papists endeavoured to undermine them by degrees, by taking possession of all their fortified places, then by excluding them from all public offices, and then by the revocation of the edict itself, in 1685, when all the Protestant clergy were banished the kingdom, and the dragoons were sent from place to place, exercising unheard-of cruelties, to force the Hugonots to change their religion, at the same time that their children were shut up in convents. In consequence of these proceedings, great numbers turned Papists, and others stole out of the kingdom, flying into England, Holland, Germany and Switzerland, while others, who were taken, were committed to prison, and sent to the galleys, or otherwise cruelly punished. Some again who were newly converted, being troubled in mind, fled to the mountains of Cevennes, where they stood on the defensive.

There are twenty-one universities in France, of which six are in the north, as Douay, in Flanders; Caen, in Normandy; Paris, in the isle of France; Rheims, in Champagne; Pont-a-Mousson, in Lorraine; and Strasburgh, in Alsace. Seven are in the middle, viz. Nantz, in Bretagne; Angers, in Anjou; Orleans, for law only; Bourges, in Berry; Poitiers, in Poitu; Besancon, in the Franche Comte;

Comte ; and Dijon, in Burgundy. The remaining eight are in the south, namely, Valence, in Dauphiny ; Cahors, in Quercy ; Bourdeaux, in Guienne ; Aix, in Provence ; Orange, in the Comtat of Avignon ; Toulouse and Montpellier, in Languedoc ; and Perpignan, in Roussillon.

Besides these, there are several academies, designed to cultivate and bring to perfection several sciences ; as, the French Academy, founded by cardinal Richlieu, in 1635. They assembled, for the first time, on the 10th of July, 1657. Every three months they have a new director and a new chancellor, who are chosen by lots. The members of this academy meet three times a week, in the Old Louvre. Their principal design is to improve the French language, eloquence, and poetry. They celebrate the feast of St. Lewis every year, on the 24th of August ; and on this day they distribute the prizes, which consist of two medals of gold, the one two hundred livres in value, for him who produces the best piece of eloquence ; the other has the bust of the reigning king, and is worth three hundred livres : it is bestowed on him who delivers in the best poem.

The Academy of Inscriptions and Belles Lettres was founded by Lewis XIV. at the solicitation of John Baptist Colbert, his prime minister. At first they only studied medals, devices, and inscriptions ; but afterwards they applied their minds to the belles lettres, and the learned languages. The academicians are forty in number, and they meet twice a week in the Louvre.

The Academy of Sciences likewise owes its establishment to Colbert, who laid down the plan in 1666. It consists of seventy members, who meet on Wednesdays and Saturdays, in the Palace Royal. These publish their Memoirs every year, which are not unlike the Philosophical Transactions.

The Academy of Painting and Sculpture began in 1643. The academicians have two large halls in the Louvre, where they work, and young people go for instruction. The professors are judges of their performances.

The Academy of Architecture is also owing to M. Colbert, who founded it in 1671. It is divided into two classes ; the first consists of eleven academicians, and the second of seventeen.

The Academy of Politics was founded by the marquis de Torcy, minister of state. It is not so public as the others, because they treat of affairs of state therein. They

admit a certain number of young men, to whom they intrust several acts, treaties, and documents. They are skilled in the languages of several nations : those who are found to have great capacities are advanced to the most important offices in the kingdom, and employed in negotiations with foreign countries.

Besides these, there is an Academy of Music, much frequented by those who have a taste for this art, especially foreigners. To these we may add, five mathematical schools, erected by Lewis XIV. in different parts of the kingdom, where young gentlemen are instructed in all such learning as will qualify them to serve his majesty, as well by land as by sea.

The king of France is a sovereign monarch, and the succession is so well established that the king never dies. The law which excludes the women from the throne is called the Salique law. The king has a great number of officers, in so much that it would take up a great deal of room only to mention their names, and distinguish their different posts and employs. The chief officer of the court was formerly the constable ; but this high place was abolished in 1627. The principal ecclesiastical officer at present is the grand almoner ; and the temporal, the grand maitre de hotel.

The officers employed in the government of provinces are very numerous ; it being a maxim in France to multiply employments as much as possible, to create a great number of dependents on the court, and to raise an emulation who shall best perform their duty.

Justice in general is distributed by the parliaments, which are the supreme courts from whence there is no appeal. Of these there are twelve, five of which are in the north, viz. Rouen, Paris, Douay, Rennes, and Metz. Two are in the middle, Dijon and Besancon ; and five are in the south, namely, Bourdeaux, Pau, Toulouse, Aix, and Grenoble. Their jurisdiction extends no farther than the governments in which they are situated, except that of Paris, whose jurisdiction extends all over the kingdom.

FRANCHISE, in a general sense, a privilege or exemption from ordinary jurisdiction ; as that for a corporation to hold pleas among themselves to such a value, or the like.

FRANCHISE is sometimes used for an immunity from a tribute ; in which sense it is either personal or real ; that is, belonging

ing to a person immediately, or else by means of this or that place of which he is chief, or a member.

FRANCHISE is also used for an asylum or sanctuary, where people are secure of their persons.

FRANK LANGUAGE, or LINGUA FRANCA, a kind of jargon spoken in the Mediterranean, and particularly throughout the coasts and parts of the Levant, composed of Italian, Spanish, French, vulgar Greek, and other languages.

FRANK-PLEDGE, in our law, a pledge or surety of the behaviour of freemen.

FRANKINCENSE, *Thus*, in the materia medica. See the article *Thus*.

FRAPPING a Ship, passing four, five, or six turns of a cable round the body or hull of a ship in the middle, to secure her in a great storm, when it is apprehended she has not sufficient strength to resist the violent efforts of the waves: this expedient, however, is rarely put in practice, unless in very old ships, which the owners are willing to venture till the last.

FRATERNITY, in a civil sense, a company or gild of certain artificers or traders.

FRATRIAGE, *Fratriagium*, the partition among brothers or coheirs, coming to the same inheritance or succession.

FRATRICIDE, the crime of murdering one's brother.

FRAUD, in law, deceit in grants or conveyances of lands, &c. or in bargains and sales of goods, &c.

FRAXINUS, the ash, in botany. See *Ash*.

FRECKLES, *Lentigines*, in medicine, small, yellowish, or dusky spots appearing on the skin, chiefly about the face, neck, and hands. It is mostly a natural affection caused by the heat of the sun, whereby some parts of the skin appear of a darker colour than usual, called tan, sunburn, and morpew, which differ only in degree, and usually disappear in winter. Mr. Homberg's medicine, which is composed of bullocks gall mixed with alum, and after the alum is precipitated, exposed three or four months in the sun in a close phial, is the best remedy.

FREE, in a general sense, is used in opposition to whatever is constrained or necessitated. When applied to things endowed with understanding, it more particularly relates to the liberty of the will.

FREE-STONE, a whitish stone dug up in many parts of England, that works

like alabaster, but is more hard and durable; being of excellent use in building, &c. It is a kind of the grit stone, and is called free, from its being of such a constitution as to cut freely in any direction: such is the Portland-stone, and the free-stone of Kent.

FREE-THINKER. See *Deist*.

FREE-WARREN, the power of granting or denying license to any one to hunt in such and such ground.

FREEDOM, in general, the state or quality of being free.

FREEDOM of a Corporation, the right of enjoying all the privileges and immunities belonging to it.

FREEDOM of the Will, that power or faculty of the mind, whereby it is capable of acting, chusing or rejecting, whatever it judges proper. Of this every man must be sensible, who finds in himself a power to begin or forbear, continue or end several actions, barely by a thought or preference of the mind. The actual exercise of this power, is that which we call volition or willing; and the agent capable of acting in this manner, is denominated free, and the actions he performs, voluntary. Whereas, on the other hand, wherever any performance or forbearance are not equally in a man's power; wherever doing or not doing will not equally follow upon the preference of his mind, there he is not free, though perhaps the action may be voluntary.

FREEZE, or FRIEZE, in commerce, a coarse kind of woollen stuff, or cloth, for winter wear; so called, as being freezed or napped on one side.

FREEZING, in philosophy, the same with congelation. See *Congelation* and *Frost*. Philosophers are by no means agreed as to the cause of this phenomenon. It seems probable that cold and freezing arise from some substance of a saline nature, floating in the air; since all salts, and particularly nitrous ones, when mixed with ice and snow, greatly increase their cold and even bulk.

By means of freezing, wine, vinegar, and malt-liquors may be reduced to a fourth part of their quantity, without any considerable loss of their essential parts; since only the aqueous parts freeze, leaving the vinous parts concentrated or brought into less compass, and capable of being transported with less expence, and keeping for several years.

FREEZING, in naval affairs, a sort of ornamental painting, consisting of trophies,

phies, flower-work. &c. on a ship's quarter, stern, or forepart, immediately below the upper-edge of her sides, called the gunnel.

FREIGHT, in navigation and commerce, the hire of a ship, or a part thereof, for the conveyance and carriage of goods from one place to another; or the sum agreed on between the owner and the merchant, for the hire and use of a vessel.

FREIGHT, is also used for the burden or lading of a ship, or the cargo of goods, &c. which she has on board.

FREIGHT also signifies a duty of fifty sols per ton, paid to the crown of France by the masters of foreign vessels going in or out of the several ports of that kingdom.

FRESCO, a method of painting in relief on walls, so as to endure the weather. It is performed with water-colours on fresh plaster; or in a wall laid with mortar not yet dry. This sort of painting has a great advantage by its incorporating with the mortar, and drying along with it, becomes very durable. The compost should be made of rubbish stones mixed with well-burnt flint, or lime, and water; but the saltness of the lime must be washed out, by pouring water frequently on it; but this should not be done in moist weather.

The colours are white, made of lime slacked some time; and white marble dust, red and yellow ochre, violet red, verditer, lapis lazuli, smalt, black, Spanish brown, Spanish white, &c. all which are ground and worked up with water.

The ancients painted on stucco; and we may remark in Vitruvius what infinite care they took in making the incrustations or plastering of their buildings, to render them beautiful and lasting; though the modern painters find a plaster made of lime and sand preferable thereto.

FRESHEN *the Hawse*, among sailors, when a ship rides at anchor, there is always some canvas, mat, leather, or such like matter wound about the cable in the hawse hole, and where it may rub against the stem: the matter used on this occasion is called service, and this act of renewing the service is called freshening the hawse, which is a circumstance a seaman can never be too careful in observing, for the preservation of the cables, on which all depends.

FRESHES, among sailors, the violence of an ebb-tide, increased by heavy rains, flowing into the sea, which it discolours to a considerable distance from the shore on such occasions, where the line on which

the two colours meet, may be distinctly observed for a great length along the coast.

FRET, or **FRETTE**, in architecture, a kind of knot or ornament, consisting of two lists or small fillets variously interlaced or interwoven, and running at parallel distances equal to their breadth.

FRET, in heraldry, a bearing composed of six bars, crossed, and variously interlaced: some call it the true-lover's knot.

FRET, in music, a kind of stop on some instruments, particularly bass viols and lutes.

FRET-WORK, that adorned with frets. It is sometimes used to fill up and enrich flat empty spaces; but is mostly practised in roofs, which are fretted over with plaster-work. The Italians also use fret-works in the mantling of chimnies with great figures, a cheap piece of magnificence, and as durable almost within doors, as harder matters in the weather.

FRETTY, in heraldry, an appellation given to bearings made up of six, eight, or more bars laid across each other, in the manner of frets.

FRIABLE, among naturalists, an appellation given to bodies that are easily crumbled to pieces; such are the free-stone, pumice-stone, &c.

FRIAR, or **FRIER**, from the French *frere*, a brother, a term common to monks of all orders, founded on this, that there is a kind of fraternity, or brotherhood, between the several religious persons of the same convent or monastery.

Friars are generally distinguished into these four principal branches, viz. 1. Minors, grey friars, or Franciscans. 2. Augustines. 3. Dominicans, or black friars. 4. White friars, or Carmelites. From these four the rest of the orders descend.

FRIAR, in its more peculiar and proper sense, is restrained to such monks as are not priests, for those in orders are generally dignified with the title of father.

FRIAR's COUL, in botany, a name given to several species of arum.

FRICTION, the act of rubbing the surface of one body against that of another.

Among machines, some have a great deal more friction than others, and some very little. Thus a pendulum has little or no friction, but what arises from the resistance of the air. But a carriage has a great deal of friction: for upon plain ground a loaded cart requires the strength of several horses to draw it along; and all or most of this force is owing to its friction. All compounded machines have great friction,

friction, and so much the more as they consist of more parts that rub against one another. And there is a great variety in several sorts of bodies, as to the quantity of friction they have, and even in the same bodies under different circumstances : upon which account it will be impossible to give any standing rules, by which its quantity can be exactly determined.

The friction, *ceteris paribus*, increases with the weight almost in the same proportion. The friction is also greater with a greater velocity, but not in proportion to it, except in very few cases. A greater surface also causes something more friction, with the same weight and velocity : yet friction may sometimes be increased by having too little surface to move on : as upon clay, &c. where the body sinks.

The friction arising from the bending of ropes about machines, differs according to their stiffness, the temper of the weather, degree of flexibility, &c. but, *ceteris paribus*, the force or difficulty of bending a rope is as the square of the diameter of the rope, and its tension, directly ; and the diameter of the cylinder or pulley it goes about, reciprocally.

The resistance of a plane moving through a fluid is as the square of the velocity.

The friction of a fluid running through a tube is as the velocity and diameter of the tube.

But the friction is greater in respect to the quantity of the fluid, in small tubes than in larger ones ; and that reciprocally as their diameters ; but the absolute quantity of the friction in tubes is but very small, except the velocity be very great, and the tube very long.

As to the mechanic powers. The single lever makes no resistance by friction : but if by the motion of the lever in lifting, the fulcrum, or place of support, be changed further from the weight ; the power will be decreased thereby.

In any wheel of a machine, running upon an axis, the friction on the axis is as the weight upon it, the diameter of the axis, and the angular velocity. This sort of friction is but small.

The friction of pulleys is very considerable, when the sheaves rub against the blocks ; and by the wearing of the holes and axels.

In the screw, there is a great deal of friction : those with sharp threads have more friction than those with square

threads : and endless screws have more than either. Screws with a square thread raise a weight with more ease than those with a sharp thread.

In the common screw the friction is so great, that it will sustain the weight in any position given, when the power is taken off ; and therefore the friction is at least equal to the power. From whence it will follow, that in the screw

The power must be to the weight or resistance, at least as twice the perpendicular height of a thread, to the circumference described by one revolution of the power ; if it be able to raise the weight, or only sustain it. This friction of the screw is of great use, as it serves to keep the weight in any given position.

In the wedge, the friction is at least equal to the power, as it retains any position it is driven into ; therefore in the wedge, the power must be to the weight at least as twice the base to the height to overcome any resistance.

To find the friction of any engine, begin at the power, and consider the velocity and the weight at the first rubbing part ; and estimate its quantity of friction by some of the foregoing articles ; then proceed to the next rubbing part and do the same for it, and so on through the whole.

And note, that something more is to be allowed for increase of friction, by every new addition to the power.

FRICITION, in medicine, the rubbing a diseased part, either with or without unguents, oils, &c. Dr. Cheyne greatly recommends friction with a flesh-brush to persons of weak nerves and sedentary lives ; by which means a full and free perspiration would be promoted, and obstructions removed, to the great relief of many valetudinarians.

FRIEZE, FREEZE, or FRIZE, in architecture, a large flat surface, or member, separating the architrave from the cornice, being that part of the entablature between the architrave and cornice. In the Tuscan order it is quite plain, but is enriched with triglyphs in the Doric ; it is sometimes made arched or swelling in the Ionic : in the Corinthian and Composite it is frequently joined to the architrave by a little sweep, and sometimes to the cornice ; and in these richer orders, it is commonly adorned with sculpture, figures, compartments, histories, foliages, festoons, &c.

From the variety of their ornaments, friezes obtain various denominations.

FRIGATE,

F R O

FRIGATE, in the marine, a light nimble ship, built for quick sailing: frigates carry from twenty to thirty-eight cannon, and are esteemed excellent cruisers.

Formerly the name of frigate was only known in the Mediterranean; and given to a kind of long vessel, which they made use of in those seas; and went with sails and oars. The English were the first who appeared on the ocean with those ships; and fitted them for action as well as sailing.

FRIGID, is applied to a jejune stile, that is unanimated by any ornaments, and consequently without any force or vigour.

FRIGID ZONE, in geography. See *Zone*.

FRIT, in the glass manufacture, the matter or ingredients of which glass is to be made, when they have been calcined or baked in a furnace; or it is the calcined matter to be run into glass. There are three kinds of frit; the first, that made for crystal; the second, or ordinary frit, is that made for the common white or crystalline metal; and the third, that made for green glass.

It may be observed, that glass might be made by immediately melting the materials, without this calcining and making them into frit; but the operation would be much more tedious.

FRIZING of Cloth, a term in the woollen manufactory, applied to the forming of the nap of a cloth, or stuff, into a number of little hard burrs or prominences, covering almost the whole ground thereof. Some cloths are only frized on the back-side, as black cloths; others on the right-side, as coloured and mixed cloths, ratteens, baize, freezes, &c.

Frizing may be performed two ways; one with the hand, that is, by means of two workmen, who conduct a kind of plank that serves for a frizing instrument. The other way is by a mill, worked either by water, or a horse, or sometimes by men. This latter is esteemed the better way of frizing, by reason the motion being uniform and regular, the little knobs of the frizing are formed more equably and regular.

FROG, *Rana*, in zoology, a genus of amphibious animals, the body of which is broad and short, without a tail, and furnished with four legs.

FRONDES, among botanists, denote leaves consisting of several other leaves, and forming the whole of the plant; as is the case of the fern-kind.

F R U

FRONT, in perspective, a projection or representation of the face or forepart of an object, or of that part directly opposite to the eye.

FRONTAL, in architecture, a little fronton, or pediment, sometimes placed over a little door, or window.

FRONTALE, in medicine, a name for any external medicine, or topic, applied to the forehead: more particularly it means a refrigerating and hypnotic remedy, prepared of cold cephalics, bruised and tied up in a linen bag, four or five fingers-breadth.

FRONTATED, a term used by botanists relating to the leaf of a flower, which grows broader and broader, perhaps, terminating in a right line: and is used in opposition to cuspidated, that is, when the leaves of the flower end in a point.

FRONTIER, the border, confine, or extremity of a kingdom or province. Thus we say, a frontier town, a frontier province, &c. Frontiers were anciently called marches.

FRONTIS OS, in anatomy, called also os coronale, the bone of the forehead.

FRONTISPIECE, in architecture, the portrait or principal face of a building.

FRONTISPIECE is also used to signify an ornament fronting the title page of a book, which, in some measure, should express the subject treated of.

FRONTON, in architecture, the same with pediment.

FROST, in physiology, such an excessively cold state of the air, as converts watery fluids into ice.

FROTH, a white light substance, formed on the surface of fluids, by vehement agitation; consisting of little sphericles, or globules.

FRUCTIFICATION, among botanists, in a more lax sense, includes the flower and fruit, with their several coverings.

Strictly speaking, however, the term fructification signifies only the male and female organs of generation, called the stamina and pistil.

FRUGIVOROUS BIRDS are such as feed on fruits, either wholly or in part.

FRUIT, in general, includes whatever the earth produces for the nourishment and support of a man, and other animals, as herbs, grain, hay, corn, &c.

FRUIT more properly signifies the production of a tree, or plant, for the propagation or multiplication of its kind, in

which sense the word takes in all kinds of seeds, with their furniture. But botanists, usually understand by it that part of a plant wherein the seeds are contained.

FRUIT also implies an assemblage of seeds in a head; as in a ranunculus, &c. and all kinds of seeds, or grains, whether inclosed in a cover, capsule, or pod; and whether bony, fleshy, skinny, membranous, or the like.

The fruit in all plants, is the product, or result, of the flower; or that for the production and nutrition of which the flower was intended.

The structure and parts of different fruit differ in some things, but in all the species, the essential parts of the fruit appear to be only continuations or expansions of those which are seen in the other parts of the tree; and the same fibres are continued to them from the root. An apple, cut in two transversely, will be found principally composed of four parts. 1. A skin, or rind, which is only a continuation and expansion of the outer bark of the tree. 2. A parenchyma, or pulp, which is an expansion and intumescence of the blea, or inner bark of the tree. 3. The fibres, or ramifications of the woody part of the tree. 4. The core, which is the produce of the pith of the wood, indurated, or strengthened by twigs of the woody fibres intermixed with it. This serves to furnish a proper lodging for the seeds, and filtrates the juices of the parenchyma, or pulp, and conveys them to the seeds.

FRUITERY, a place for the keeping of fruit, a fruit-house, or fruit-loft. A fruitery should be inaccessible to any thing of moisture, and should be as much as possible so even to frost.

FRUMENTACEOUS, a term applied, by botanists, to all such plants as have a conformity with wheat, in respect of their fruits, leaves, ears, or the like.

FRUSH, or FROG, among farriers, a sort of tender horn which arises in the middle of a horse's sole; and, at some distance from the toe, divides into two branches, running towards the heel, in the form of a fork. The frush is a part of a horse's foot, the top of which only should be pared, and that every time the foot is pared, otherwise it is apt to corrupt.

FRUSTUM, in mathematics, a part of some solid body separated from the rest.

FRUSTUM, of a pyramid, or cone, is a piece or part thereof cut off, generally by a line parallel to the base. The solidity of the frustum of a square pyramid may

be found by the following theorem. To the rectangle of the sides of the two bases add the sum of their squares; that sum being multiplied into one third of the frustum's height, will give its solidity. The solidity of the frustum of a cone may be found by the following theorem. To three times the rectangle of the two diameters add the square of their difference; that sum multiplied by the height will give the solidity.

FUCUS, in botany, a genus of submarine plants belonging to the cryptogamia class of Linnæus.

There are a great many species of fucus with broader or narrower leaves, and other peculiarities; one of which, the broad-leaved, ferrated fucus, grows to the height of six, eight, or more inches.

FUGITIVE, a person obliged to fly his country on account of his crimes, debts, or other occasions.

FUGUE, in music, is when different parts of musical composition follow each other, each repeating what the first had performed. There are three kinds of fugues; the simple, double, and counter.

FULCRUM, in mechanics, the prop or support by which a lever is sustained. See *Lever*.

FULICA, the coot, in ornithology, a genus of birds, of the order of the gallinæ, with a naked or bald forehead, and divided or cloven feet: add to this, that all the toes are longer than in whole footed birds, and have semicircular membranes affixed to their joints.

FULIGINOUS, whatever proceeds from a thick footy smoke, such as litharge and lamp-black.

FULL-MOON, *plenilunium*, that phasis of the moon when, in her opposition to the sun, the whole of her disk is illuminated; in which time eclipses of the moon can only happen. See *Moon* and *Eclipse*.

FULLER, a workman employed in the woollen-manufactories, to mill, or scour, cloths, serges, and other stuffs, in order to render them more thick, compact, and durable. See *Cloth*.

FULLER'S EARTH, *cinolia purpurascens*, a kind of marle of a close texture, and of a tolerable smooth and glossy surface, when it has been rubbed. It is extremely soft, and unctuous to the touch, of a greyish brown-colour, with some admixture of the olive or greenish. The finest fuller's earth in the world is dug in England, and all the nations round us would gladly purchase it at a great price.

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were the exportation of it allowed; but one of the great advantages of our woollen manufactory is the keeping it at home.

It is of great use in scouring cloths, stuffs, &c. as it imbibes all the oil and grease used in dressing the wool.

FULLER'S WEED, in botany, a name sometimes given to the dipfucus, or teal.

FULLING, the art or act of scouring and pressing cloths, stuffs, stockings, &c. to cleanse, thicken, and render them more firm and strong, which is done by means of a water-mill. In the troughs of the mill are laid the cloths, stuffs, &c. intended to be full: then letting the current of water fall on the wheel, the mallets are successively let fall upon them, when by their weight and velocity they stamp and press the stuffs very strongly, which by this means become thickened and condensed: In this operation, fuller's earth is used with some proportion of sope; but sope alone would do much better, was it not dearer than fuller's earth. Fulling of stockings, caps, &c. is performed either with hands or feet, or a kind of wooden machine, either armed with wooden teeth, or those of horses or bullocks. The ingredients generally used on this occasion are fuller's earth, urine, white and green sope; but water softened with chalk is far preferable.

FULLING-MILL, a machine for fulling cloth.

FULMINATING, something that thunders, or resembles thunder.

FULMINATION, in chemistry, is used in a synonymous sense with detonation. See *Detonation*.

FUMIGATION, in chemistry, a kind of calcination, when metals, or other hard bodies, are corroded, or softened, by receiving certain fumes for that purpose.

FUMIGATION, in medicine, the application of fumes to particular parts of the body; as those of factitious cinnabar to venereal ulcers.

FUMITORY, *Fumaria*, in botany, an annual plant growing in shady cultivated grounds, and flowers in May and June. This herb is recommended as an aperient and resolvent in obstructions of the viscera, in scorbutic and cutaneous maladies. Hoffman has a high opinion of it as a purifier of the blood, and gives it the preference to all the other herbs made use of in that intention. However, at present it is a stranger to practice; its sensible operation is by loosening the belly, and promoting urine.

F U N

FUNCTION, the act of fulfilling the duties of any employment.

Function is also applied to the actions of the body.

FUNCTION, in algebra, denotes any compound quantity; and when one of the component quantities is variable, it is said to be a variable function.

FUND, in anatomy, signifies the bottom of any cavity in the body; thus, the fund of the eye is that part possessed by the choroides and retina; the fund of the uterus, the fund of the bladder, &c. signify also the bottom of these parts. See *Eye* and *Uterus*.

FUND, in commerce, the stocks of the great trading and monied companies. See *Stocks*.

FUNDS is also a term adapted by those who speak of the public revenue of nations, to signify the several taxes that have been laid upon merchandizes either by way of duties of custom, or excise, or in any other manner, to supply the exigencies of the state, and to pay interest for what sums it may have occasion to borrow.

FUNERAL RITES, ceremonies accompanying the interment or burial of any person.

FUNERAL COLUMN, a column crowned with an urn, wherein the ashes of some deceased person are supposed to be enclosed; the fust or shaft being beset with tears or flames, the symbols of grief and immortality. See *Column*.

FUNGUS, in surgery, a soft, fleshy, spongy excrescence, arising in the membranes, tendons, and other nervous parts, in consequence of ulcers, wounds, contusions, &c.

If ulcers should be of such a nature as to produce a spongy lax flesh sprouting very high above the surface, it will be necessary to destroy it by some of the escharotics, or the knife: this fungus differs very much from that belonging to healing wounds, for which dry lint is generally the best remedy, being more eminent and lax, and generally in one mass; whereas the other is in little distinct protuberances. It approaches often towards a cancerous complexion; and when it rises upon some glands, actually degenerates sometimes into a cancer, as has happened in buboes of the groin. When these excrescences have arose in venereal ulcers, escharotics are to be preferred; and pulvis angelicus, which is a composition of precipitate powder and burnt alum, as it eats deeper, is preferable to precipitate alone.

FUNGUS,

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FUNGUS, in botany, an order of vegetables, extremely different from all others, and belonging to the cryptogamia class of Linnæus.

The fungi have, indeed, so little of the common and general appearance of vegetables, that many have denied them to be such, and contended for their being only excrementitious matter, protruded from decaying vegetables of other kinds. But notwithstanding the fungi have neither the colour or texture of other plants, nor leaves nor flowers like them; yet they must be allowed to belong to the vegetable kingdom, as having absolute and perfect seeds, consisting usually of single antheræ, which produce plants like those from which they are collected.

FUNNEL of a *Chimney*, the shaft or smallest part of the waste, where it is gathered into its least dimensions. Palladio directs, that the funnels of chimneys be carried through the roof four or five feet at least, that they may carry the smoke clear from the house into the air. See *Chimney*.

He also advises, that chamber-chimneys be not made narrower than ten or eleven inches, nor broader than fifteen; for if too narrow, the smoke will not be able to make its way; and if too wide, the wind will drive it back into the room.

FUR, or **FURR**, in commerce. See *Furr*.

FURIES, *Eumenides*, *Diræ*, certain goddesses whose office it was to punish the guilty after death. These were three in number; *Alecto*, *Megæra*, and *Tisiphone*, who were described with snakes instead of hair, and eyes like lightening, carrying iron chains and whips in one hand, and in the other flaming torches; the latter to discover, and the former to punish the guilty; and they were supposed to be constantly hovering over such persons as had been guilty of any enormous crime. Mythologists suppose, that *Tisiphone* punished the crimes which sprang from hatred or anger; *Megæra*, those from envy; and *Alecto*, those from an insatiable pursuit after riches and pleasure.

FURLING, in the sea language, rolling a sail up close to the yard, stay, or mast, and fastening it by rolling a bandage or rope close about it, and hence

FURLING LINE is a line to fasten the sail.

FURLONG, a long measure, equal to 1/8th of a mile, or forty poles.

It is also used in some law-books for the eighth part of an acre.

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FURLOUGH, in the military language, a licence granted by an officer to a soldier, to be absent for some time from his duty.

FURNACE, a vessel or utensil for maintaining a strong fire, either of coal or wood.

FURNACE is also applied to that used in the melting of iron, which authors frequently confound with iron forges, though there is a considerable difference between them. See *Forge*. This furnace is a brick-structure, much in the shape of an egg set on end, wherein the iron-ore, after it has been burnt in a kiln, is put, intermixed with cinders and charcoal, and the whole melted till it trickle down into the receiver underneath.

Bellows-FURNACE is one of the two kinds of furnaces used in coinage for the fusion of metals, consisting of a flat hearth at bottom, into which the air may be admitted by a hole, as in the chemical furnace.

Glass Painter's FURNACE is made of brick, nearly square, and about two feet and a half each way. It is cut horizontally in the middle, by a grate, which sustains the pan or shovel the glass is baked in. This furnace has two apertures, one below the grate, to put the fuel in at; the other above it, through which the workmen spies how the action of the colours goes on.

Hatter's FURNACE are of three kinds: a little one under the mould, whereon they form their hats; a larger in the scouring room, under a little copper full of lees; and a very large one under the great copper, wherein they dye their hats.

Plumber's FURNACE is a receptacle for the melting of their metal for casting sheet lead, &c.

Wind-FURNACE, the second furnace used in the fusion of metals for coinage. It is called a wind-furnace, by reason the air entering through the vent-hole at bottom, which is always open, serves the same purpose as the bellows in the other furnaces. Gold is generally melted in the bellows furnace, as requiring an intenser heat before it fuses; but silver and copper are commonly melted in the wind-furnace.

FURNITURE, in dialling, certain additional points and lines, such as the ecliptic, circles of declination, azimuths, Italian hours, points of the compass, &c. drawn on dial-planes.

FUROR UTERINUS, a species of madness peculiar to women, proceeding from

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from an ardent and inordinate desire of coition, which deprives the patient of the use of reason, so that she speaks all manner of obscene words, and abandoning all shame, invites the men to venereal embraces. The immoderate desire of copulation is produced by the plenty, acrimony, and heat of the uterine juices, exceeding the natural bounds, and creating an extraordinary turgency in the feminal vessels, which stimulating in a manner and inflaming the genital parts, excites a vehement and unruly appetite to venereal commerce.

FURR, in commerce, signifies the skin of several wild beasts, dressed in alum with the hair on, and used as a part of dress by princes, magistrates and others. The kinds most in use are those of the ermine, sable, castor, hare, rabbit, &c.

FURRS, in heraldry, a bearing which represents the skins of certain beasts, used as well in the doublings of the mantles belonging to the coat-armour, as in the coat-armours themselves.

FURUNCLE, or BOIL, in surgery, a small resisting tumour, with inflammation, redness, and great pain, arising in the adipose membrane, under the skin.

As there is no part of the body free from being the subject of furuncles, so the whole is sometimes so miserably infested with them, that the patient can hardly tell how to stir himself, or on what part to lie. Not only adults, but also the younger, even new-born infants, are obnoxious to this dreadful disorder, which occasions in them most fatiguing clamour and restlessness. Though there is little danger in this disease in adults; yet, in tender infants, it occasions convulsions, and even death itself.

The principal cause of furuncles is a too glutinous and inspissated state of the blood; and, consequently, the greater the inspissation, the worse and more numerous will be the furuncles.

With regard to the cure, it seems to consist chiefly in restoring the stagnating blood to its former circulation and free motion.

When the furuncles are very numerous, or return again, it is proper to use internal purging medicines, and such as attenuate and cleanse the blood. In adults, bleeding is proper, both by the lancet and scarification with cupping; and, at the same time, a strict regimen of diet should be used, drinking frequently and plentifully of a decoction of the woods, and such

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like attenuators of the blood. The patient should also entirely abstain from drinking fermented and spirituous liquors, particularly wine and its spirit; and from the two frequent use of tobacco. When the disorder is recent, external medicines only will frequently suffice for the whole cure. For this purpose a mixture of honey, acidulated with spirit of vitriol, till it has acquired a considerable sharpness, is proper to anoint the furuncles. Of no less virtue is the frequent touching them with mere spirit of vitriol or sulphur. Diffusive plasters are also found very serviceable, as those of simple diachylon, de melito, de spermaceti, vel diasaponis.

But if these medicines prove insufficient to disperse the tumour, it is to be brought to suppuration, by applying a plaster made of honey and flower, or of diachylon with the gums; and where these are insufficient, to make use of the maturing cataplasms recommended under the article *Phlegmon*.

When the furuncle is known to be ripe, by its softness and yellow head, recourse is to be directly had to the scalpel; and having made an opening, the corrupted matter contained therein is to be discharged: after this, a plaster of diachylon must be applied, and the ulcer daily cleansed of its matter, till it is healed.

Pustules and pimples arising in the face, are to be treated like furuncles; and, in both cases, the drinking of whey, and the mineral waters, is accounted good for cleansing the blood.

When sucking infants are afflicted with furuncles, it is proper to give the mother, or nurse, some purging medicine, and to order a strict regimen and diet. At the same time the infant should take some gentle laxative medicine, with absorbent powders, to allay the acrimony of its juices. *Heister*.

FURZE, or FURZE-BUSH, in botany. See *Ulex*.

FUZEE, in clock-work, is that conical part drawn by the spring, and about which the chain or string is wound; for the use of which, see the articles *Clock* and *Watch*.

FUSIBILITY, in natural philosophy, that quality of bodies which renders them fusible.

FUSIL, in heraldry, a bearing of a rhomboidal figure, longer than the lozenge, and having its upper and lower angles more acute and sharper than the other

other two in the middle. It is called in Latin, *fusus*, a spindle, from its shape.

FUSILIERS, or **FUSILEERS**, in the military art, foot soldiers armed with fusées, or firelocks.

FUSION, the melting of metals, minerals, &c. by means of fire. Different metals run in different manners from their ores: thus, lead, though extremely fusible in the metal, runs with difficulty from the ore, so as to require a considerable violence of fire.

Tin runs from its ore with greater ease than lead, and is therefore melted in much less furnaces: but copper requires an intense heat, or a blast furnace; and both iron and copper absolutely require immediate contact with the fuel employed. Hence it appears that each metal must have its determinate degree of heat, to run it with advantage from the ore or stone.

It seems principally owing to a defect in the knowledge of fusion, that so many recrements or slags of metals, anciently thrown as useless from the furnace, have been of late wrought to considerable profit by more skilful workmen; at least it seems more rational to attribute the success to this cause, than to a supposed growth of metals in such slags; or to believe that lead has grown rich in silver by lying exposed to the open air, while perhaps it is rather owing to the unskilfulness of the former workmen, who were unable to separate all the silver contained in the lead.

All moisture, and too sudden cooling, prove prejudicial to the more ignoble metals after fusion, and sometimes dangerous to the operator: for a little water falling upon melted iron or copper, makes them expand with prodigious violence, and discharge themselves abroad with a force like that of a cannon; and even sudden

cooling will often occasion the surface of the metal to crack, and suffer the more internal part, not yet set or fixed, to issue out to a considerable distance; whence either the loss of the metal or mischief may ensue.

To prevent these ill effects, after co-pellation it is usual for the operator to throw a quantity of water, all at once, upon the lump of silver, as it lies in the test, at the moment when it begins to grow rigid; for the water, by its coldness, suddenly makes so thick a cover upon the surface of the silver, that the hotter parts in the inside cannot break through the upper. *Skaw's Chem. Lect.*

FUST, the same with the shaft of a column.

FUSTIAN, in commerce, a kind of cotton stuff, which seems as it were whaled on one side.

Right fustians should be altogether made of cotton-yard, both whoof and warp; but a great many are made, of which the warp is flax, or even hemp.

There are fustians made of several kinds, wide, narrow, fine, coarse; with shag or nap, and without it.

FUSTICK, or **FUSTOCK**, a yellow wood, that grows in all the Caribbe-islands, used in dying yellow.

FUTTOCKS, in ship-building, that part of a timber, which reaches from the floor to the top-timber. See *Timber*.

FUTTOCK-Sbrowds. See *Sbrowds*.

FUTURE, denotes whatever regards futurity, or the time to come.

FUTURE TENSE, among grammarians. See *Tense*.

FUZEE, or **FUSEE**, in military affairs. See *Fuzee*.

FUZEE, among farriers, two dangerous splents, joining from above downwards. See *Splent*.

G.

G A G

G, in grammar, the seventh letter of our alphabet, and fifth consonant; but in the Greek, and all the oriental languages, it occupies the third place. It is one of the mutes, and cannot be sounded without the assistance of some vowel. In English it has a hard and soft sound; hard, as in the words *game*, *gun*, &c. and soft, as in the words *gesture*, *giant*, &c. at the end of words, *gh* is pronounced like *ff*, as in the words *rough*, *tough*, &c. The letter *g* is also used in many words where the sound is not perceived, as in *sign*, *reign*, &c.

In music *G* is the character, or mark, of the treble cleff; and from its being placed at the head, or marking the first sound in Guido's scale, the whole scale took the name gamut. See *Cleff* and *Gamut*.

GABIONS, in fortification, baskets made of osier-twigs, of a cylindrical form, six feet high, and four wide; which being filled with earth, serve as a shelter from the enemies fire.

GABLE, or **GAVEL**, among builders. See *Gavel*.

GAD-FLY, or **BREEZE-FLY**, names given to the black and yellow bodied weevil, a fly nearly as large as the common blue flesh-fly.

GAGATES, **JET**, in natural history.

GAGE, in law-books, the same with surety or pledge.

GAGE, among letter-founders, a piece of box, or other hard wood, variously notched; the use of which is to adjust the dimensions, slopes, &c. of the different sorts of letters. See *Letter Foundery*.

Sliding-GAGE, a tool used by mathematical instrument makers, for measuring and setting of distances. It is also of use in letter-cutting, and making of moulds.

GAGE, or **Weather-GAGE**, in navigation, a ship is said to have gained the weather-gage of another when she makes a greater progress to the windward, or

G A L

when she sails to to the windward of some other. See the article *Tacking*.

Sea-GAGE, an instrument invented by Dr. Hales and Dr. Desaguliers, for finding the depth of the sea.

Bucket-Sea-GAGE, an instrument contrived by Dr. Hales, to find the different degrees of coldness and saltness of the sea, at different depths; consisting of a common household pail or bucket, with two heads to it. These heads have each a round hole in the middle, near four inches diameter, and covered with valves opening upwards; and that they might both open and shut together, there is a small iron-rod fixed to the upper part of the lower valve, and at the other end to the under part of the upper valve; so that as the bucket descends with its sinking weight into the sea, both the valves open by the force of the water, which by that means has a free passage through the bucket. But when the bucket is drawn up, then both the valves shut by the force of the water at the upper part of the bucket; so that the bucket is brought up full of the lowest sea water to which it had descended.

When the bucket is drawn up, the mercurial thermometer, fixed in it, is examined; but great care must be taken to observe the degree at which the mercury stands, before the lower part of the thermometer is taken out of the water in the bucket, else it would be altered by the different temperature of the air.

In order to keep the bucket in a right position, there are four chords fixed to it, reaching about four feet below it, to which the sinking weight is fixed.

Water-GAGE, or **HYDROMETER**. See *Hydrometer*.

GAIN, in commerce, is used in a synonymous sense with profit. See *Profit*.

GALANGALS, *Galanga*, in the materia medica, the name of two roots kept in the shops, a greater and a smaller; of which the smaller is by far most esteemed.

The lesser galangal is a small and short root, of an irregular figure, and of the thickness of a man's little finger, seldom met with more than an inch or two long. It should be chosen full and plump, of a bright colour, very firm and sound, and of an acrid and insupportable hot taste. The larger galangal is brought to us in pieces of two inches or a little more in length, and of near an inch in thickness, and has a much less acrid and pungent taste than the smaller kind. It is to be chosen in the largest, soundest, and heaviest pieces. The roots of both the galangals, but particularly the lesser abound with a volatile, oily, aromatic salt; the lesser is esteemed an excellent stomachic: it has the credit of being a great cephalic, cardiac, and uterine, but is more particularly recommended in vertigos. The greater galangal possesses the same virtues, but in a less degree.

* **GALANTHIS**, in fabulous history, servant to Alcmena, who when Juno sat at the gate of Amphitryon's palace, with her legs across, and her fingers interwoven, in order to prevent Alcmena's delivery, ran hastily out with the news that her mistress was delivered, upon which the goddess starting up, broke the enchantment, and Alcmena brought forth Hercules, but Juno was so incensed at Galanthis, that she changed her into a weazel.

GALANTHUS, the snow-drop, in botany, a genus of plants, the same with the narcisso-leucoium of authors, with a large snow-white flower.

GALAXY, in astronomy, the via lactea, or milky way in the heavens: a tract of a whitish colour, and considerable breadth, which runs through a great compass of the heavens, sometimes in a double, but for the greatest part of its course in a single stream; and is composed of a vast number of stars, too minute or too remote from the earth, to be distinguished by the naked eye; but are discovered in all parts of it, in great numbers, by the assistance of the telescope.

GALBANUM, in pharmacy, a gum issuing from the stem of an umbelliferous plant, growing in Persia and many parts of Africa. It attenuates and dissolves tough phlegm, and is therefore of service in asthmas and inveterate coughs; it is also of great service in hysteric complaints; it dissipates flatulencies, promotes the menses, and facilitates delivery and the expulsion of the secundines. It is given in pills and electuaries, and is used externally in form of a plaster, applied to the belly, against

habitual hysteric complaints, and on many other occasions.

GALENIC, or **GALENICAL**, in pharmacy, a manner of treating diseases founded on the principles of Galen. The distinction of galenical and chemical was occasioned by a division of the practitioners of medicine into two sects, which happened on the introduction of chemistry into medicine; then the chemists arrogating to themselves every kind of merit and ability, stirred up an opposition to their pretensions, founded on the invariable adherence of the other party to the antient practice. And though this division into the two sects of galenists and chemists has long ceased, yet the distinction of medicines, which resulted from it, is still retained. Galenical medicines are those which are formed by the easier preparations of herbs, roots, &c. by infusion, decoction, &c. and by combining and multiplying ingredients; while those of chemistry draw their more intimate and remote virtues by means of fire and elaborate preparations, as calcination, digestion, fermentation, &c.

GALILEANS, a sect of Jews. Their founder was one Judas, a native of Galilee, from which place they derived their name. The chief, esteeming it an indignity for the Jews to pay tribute to strangers, raised up his countrymen against the edict of the emperor Augustus, which had ordered a taxation or enrolment of all the subjects of the Roman empire.

GALL, in the animal œconomy, the same with bile.

GALL-BLADDER, called vesicula, and cystis fellea, is usually of the shape of a pear, and of the size of a small hen's egg. It is situated on the concave side of the liver, and lies upon the colon, part of which it tinges with its own colour. It is composed of four membranes, or coats; and furnished with an unctuous liquor. The use of it is to collect the bile, first secreted in the liver, and mixing it with its own peculiar produce, to perfect it farther, to retain it together a certain time, and then to expel it.

GALL, in natural history, any protuberance or tumour produced by the puncture of insects on plants and trees of different kinds. These galls are of various forms and sizes, and no less different with regard to their internal structure.

Oak-galls put in a very small quantity, into a solution of vitriol in water, though but a very weak one, give it a purple or violet colour; which, as it grows stronger, becomes

becomes black; and on this property depends the art of making our writing-ink, as also a great deal of those of dying and dressing leather, and other manufactures. In medicine, galls are found to be very astringent, and good, under proper management, in diarrhœas, dysenteries, and hæmorrhages of all kinds; they have also a very eminent virtue as a febrifuge. Half a dram, or more, of the powder of Aleppo-galls may be given for a dose, and will often cure an intermittent fever. They are also used externally by way of fomentation in procidentia of the anus: and a decoction of them has been injected in the fluor albus, with very great success.

GALLEASSES, in the marine, the largest sort of armed vessels next to ships of war: they are a sort of ship of one deck and three masts: and are used by the Venetians only.

GALLEON was formerly a name given to ships of war which had three or four decks. That name is now no longer in use but with the Spaniards, which they give to their ships that are destined for the West-India voyages. These ships which are in general built of a larger size, have always four decks. They give also the same name to greater or smaller vessels, which go yearly to La Vera Cruz. The Portuguese have ships which they call caragues, somewhat resembling the galleon, which they send to India and the Brazils.

GALLERY *of a Ship*, a sort of railed balcony, without the cabin, at the stern or quarter of a ship, for the convenience of the commander.

GALLERY, in architecture, a covered place in a house, much longer than broad, and usually in the wings of a building; its use being chiefly to walk in.

GALLERY, in fortification, a covered walk across the ditch of a town, made of strong beams, covered over head with planks, and loaded with earth: sometimes it is covered with raw hides to defend it from the artificial fire of the besieged. Its sides should be musket proof.

GALLERY *of a Mine*, a narrow passage, or breach of a mine, carried on under ground to a work designed to be blown up.

Both the besiegers, and the besieged also, carry on galleries in search of each other's mines, and these sometimes meet and destroy each other.

GALLERY, in gardening, a kind of covered walk, in a garden, formed into porticoes or arches, with horn-beams, lime-trees, or the like.

GALLY, a kind of low flat-built vessel, with one deck, made either to sail or row: they are from an hundred and twenty, to an hundred and thirty feet long, eighteen feet broad, and nine or ten feet deep. They have two masts which can be struck at pleasure, two lateen sails, and five pieces of cannon. The gallies have commonly twenty-five or thirty banks of oars on either side, to each of which are chained five or six slaves. There are no gallies now but in the Mediterranean; they commonly keep close along shore; though they sometimes venture out to sea for a short cruize.

GALLICAN, any thing belonging to France: thus the term Gallican church denotes the church of France.

GALLINÆ, in ornithology, an order of birds, the beak of which is conic, and somewhat incurvated, and the upper chap imbricated. Under this order are comprehended the ostrich, peacock, pheasant, woodcock, turkey, the common dunghill cock, partridge, &c.

GALLINACEOUS, an appellation given to the birds of the order of the gallinæ.

GALLING, or EXCORIATION. See *Excoriation*.

GALLING *of a Horse's Back*, a disorder occasioned by heat, and the chafing or pinching of the saddle. In order to prevent it, some take a hind's skin well garnished with hair, and fit it neatly under the pannel of the saddle, so that the hairy side may be next the horse.

GALLIUM, ladies-bedstraw, in botany. It is said to be an excellent astringent.

GALLON, a measure of capacity both for dry and liquid things, containing four quarts; but these quarts, and consequently the gallon itself, are different according to the quality of the thing measured: for instance, the wine gallon contains 231 cubic inches, and holds eight pounds averdupois of pure water: the beer and ale gallon contain 282 solid inches, and holds ten pounds three ounces and a quarter averdupois, of water; and the gallon for corn, meal, &c. 272 $\frac{1}{4}$ cubic inches, and holds nine pounds thirteen ounces of pure water.

GALLOON, in commerce, a narrow thick kind of ferret, or lace, used to edge or border cloaths, sometimes made of wool, and at others of gold or silver.

GALLOP, in the manege, a motion of a horse that runs at full speed.

GALLUS, the COCK, in ornithology, a well known domestic fowl, the head of which is ornamented with a longitudinal fleshy crest, or comb: the wattles are two,

G A M

and placed longitudinally on the throat. This, in its natural state, is a very robust and beautiful bird, variegated with a great number of elegant colours.

* **GALLUS**, in fabulous history, a youth who was a great favourite of Mars, who always took him along with him when he went to visit Venus in private, in order that he might keep watch to prevent their being surprised; but Gallus falling asleep, and they being discovered by Vulcan, who entangled them in a net, Mars was so greatly enraged, that he metamorphosed Gallus into a cock; and therefore, to atone for this neglect, he gives constant notice of the sun's approach by his crowing.

GALLY, in printing, a frame into which the compositor empties the lines out of his composing stick, and in which he ties up the page when it is completed.

GAMBOGE is a concreted vegetable juice, the produce of two trees, both called by the Indians caracapulli, and is partly of a gummy, and partly of a resinous nature. It is a very rough and strong purge; it operates both by vomit and stool, and both ways with much violence, almost in the instant in which it is swallowed; but yet without griping. It requires caution and judgment in administering it; but those who know how to give it properly, find it an excellent remedy in dropsies, cachexies, jaundice, asthmas, catarrhs, and in the worst cutaneous eruptions. Its dose is from two or three grains to six, eight, or ten: four grains generally operate briskly without vomiting, and eight or ten grains usually vomit briskly, and afterwards purge downwards. It is at present much more esteemed by painters in water-colours, than by physicians.

GAME, *Ludus*, in general, any diversion, or sport, that is performed with regularity, and restrained to certain rules.

GAMES, *Ludi*, in antiquity, public diversions, exhibited on solemn occasions. Such, among the Greeks, were the Olympic, Pythian, Isthmian, Nemean, &c. games; and, among the Romans, the Apollinarian, Circensian, Capitoline, &c. games.

GAMING, the art or act of performing or practising a game, particularly a game of hazard, and this generally for a sum of money.

Hazard, or chance, is a matter of mathematical consideration, because it admits of more and less. Gamesters either set out upon an equality of chance, or are supposed

G A N

to do so. This equality may be altered, in the course of the game, by the greater good fortune or address of one of the gamesters, whereby he comes to have a better chance, so that his share in the stakes is proportionably better than at first. This more and less runs through all the ratios between equality and infinite difference, or from an infinitely little difference till it come to an infinite great one, whereby the game is determined. The whole game, therefore, with regard to the issue of it, is a chance of the proportion the two shares bear to each other.

The probability of an event is greater or less, according to the number of chances by which it may happen, compared with the number of all the chances by which it may either happen or fail.

GAMMUT, **GAM**, **GAMMA**, or **GAMMAUT**, in music, a scale whereon we learn to sound the musical notes, *ut, re, mi, fa, sol, la*, in their several orders and dispositions. See *Note* and *Scale*. The invention of this scale is owing to Guido Aretine; though it is not so properly an invention as an improvement on the diagram, or scale of the Grecians.

The gammut is also called the harmonical hand, because Guido made first use of the figure of the hand to demonstrate the progression of his sounds.

Guido, finding the diagram of the ancients of too small an extent, added five more chords or notes to it; one below the proslambanomenos of the ancients, and four above the note hyperbolæon. The first he called hypoproslambanomenos, and denoted it by the letter G, or the Greek Γ, gamma; which note being at the head of the scale, occasioned the whole scale to be called by the name of gam, or gammut. The scale is divided into three series or columns, the first called durum, the second natural, and the third molle.

GAMMUT, or **GAM**, the first or gravest note in the modern scale of music. See the preceding article.

GANDER, in ornithology, the male of the goose kind.

* **GANGES**, a large celebrated river of India, which divides it into two parts, India on this side the Ganges, and India beyond the Ganges. It rises in the mountains near Little Thibet, in thirty-five degrees forty-five minutes of north latitude. It receives several rivers in its passage, and traverses several countries, falling at last into the Bay of Bengal, through several mouths. The water of this river is in great

great esteem, the natives of the adjoining countries believing there is a sanctity peculiar to this river, inſomuch that ſome worſhip it as a god; and it is annually viſited by above one hundred thouſand pilgrims, and many carry their dying friends to expire on its banks.

GANGLIO, or GANGLION, in ſurgery, a hard tubercle, generally moveable, in the external or internal part of the carpus, upon the tendons or ligaments in that part, uſually without any pain to the patient. Though ganglions ſo nearly reſemble an encyſted tumour, that Celfus makes them one and the ſame; yet their difference may appear, if it were only from their different ſeats; ganglions being confined to the tendons and ligaments of the hands and feet, whereas encyſted tumours are not reſtrained to any part of the body.

GANGRENE, a very great and dangerous degree of inflammation, wherein the parts affected begin to corrupt, and put on a ſtate of putrefaction.

A gangrene is for the generality never without danger, becauſe it eaſily changes into a ſpaciſus, or intire mortification, which never admits of cure but by taking off the dead parts. But a gangrene which is ſlight, incipient, and not ſpread far, but only affects the ſkin and fat, is not very difficult to cure; eſpecially when it happens in a young and ſtout patient, in a mild and temperate ſeaſon, and does little or no injury to the muſcles and nerves: but the larger, more violent, and confirmed is the gangrene, and the faſter it ſpreads, the more difficult it is generally to affect a cure, eſpecially in an old or weak patient; or in an ill habit of body, from a dropſy, phthiſis, or ſcorbutus: the weather alſo being too hot, or very cold, or the parts affected being near the thorax, or abdomen, may make the caſe more dangerous. Nor can this caſe be neglected without the utmoſt danger of life, or its ſuddenly turning into a ſpaciſus.

Therefore the gangrene muſt be treated ſo, that it may not terminate in a ſpaciſus. For which end, firſt of all, in plethoric and ſtrong habits, the patient muſt be bled largely, and the operation repeated at diſcretion; but in weak habits, it ſhould be omitted. The remainder of the treatment, according to Heiſter, will conſiſt chiefly in obſerving the following directions. 1. To be careful in the beginning to prevent all violent external cauſes of inflammations, too ſtrict a bandage in wounds and fractures, all foreign bodies which are ſtruck in the part, as thorns,

ſplinters, &c. improper medicines externally applied, as ointments, oils, and plaſters, with cooling and aſtringent things; all which ſhould be removed as ſoon as poſſible. 2. The next obſervation reſpects chiefly the keeping up the patient's ſtrength, eſpecially in weak and old people. This may be beſt effected by ordering a diet which not only affords good juices, but is alſo well accommodated to the age, conſtitution, and other circumſtances of the patient. In weak and old people, the moſt ſuitable diet will be ſoups, ſtrengthening broths, &c. With reſpect to medicines, the moſt proper are the correborants, uſually termed cordials, as the ſpirits, eſſences, powders, and electuaries of that tribe; eſpecially made up or mixed with conſected alkermeſs. It will be proper alſo, in this caſe, frequently to apply a ſponge to the noſe or carpal arteries, which has been dipped in Hungary water; alſo to bind it to the temples. For patients who are of a more warm, ſanguine, and bilious habit, ſoups and ptifans mixed with acid juice of citrons or lemons, will be very proper ſtrengtheners; at the ſame time, not neglecting other medicines, which are proper to be uſed in fevers; but the Peruvian bark is by many celebrated in this diſorder beyond any other internal medicine. 3. The chief and laſt obſervation concerning the treatment of a gangrene, is chiefly to diſcharge the ſtagnating and corrupted blood from the parts affected as ſoon as poſſible, to prevent the neighbouring parts from being affected thereby.

The principal means to effect this are, 1. To make uſe of proper internal, ſtrengthening medicines. 2. To make ſcarifications on the part affected, by numerous incifions lengthways, and of a ſufficient depth, in order to diſcharge the ſtagnating and corrupted blood, and to make way for the ingreſs of the virtues of the diſcutient medicines which are applied externally. Laſtly, 3. Diſcutient, ſtimulating, and balſamic fomentations and cataplaſms which reſiſt putrefaction, are to be carefully applied to the diſordered part.

The fomentation is to be applied hot, ſeveral times in a day, to the parts affected, by means of linen or woollen cloths; and to give a laſting warmth, we may apply a hot tile wrapped up in a thick cloth, or a hot bag of ſand.

GANNET, in ornithology, a bird of the larus or gull-kind, frequent on the weſtern coaſts of England.

GANTLET, or **GAUNTLET**, a large kind of glove, made of iron, and the fingers covered with small plates. It was formerly worn by cavaliers, when armed at all points.

* **GANYMEDE**, in fabulous history, son of Tros, king of Troy, was the most beautiful youth that ever was seen. Jupiter was so charmed with him, that he carried him away, and made him his cup-bearer in the room of Hebe. He deified this youth, and to comfort his father, made him a present of some very swift horses. The abbe le Pluche observes, that Ganymede was the name of the horse or image exposed by the ancient Egyptians, to warn the people before their annual inundations, to raise their terraces to a just and proper height.

GAOL, a prison, or place of legal confinement.

GAOL-DELIVERY, is where a commission is granted by the king in the nature of a letter, to certain persons, who are thereby appointed his justices, authorizing them to deliver his gaol, at such a place, of the prisoners contained therein; and for that end it commands them to meet at such place, at the time they themselves shall appoint, when the sheriff of the county is commanded to bring all the prisoners in the gaol before them, &c. 4 *Inst.* 168.

GARDANT, or **GUARDANT**, in heraldry, denotes any beast full faced, and looking right forward.

GARDEN, a plot of ground, cultivated and properly ornamented with a variety of plants, flowers, fruit, &c.

Gardens are usually distinguished into flower-garden, fruit-garden, and kitchen-garden; the first of which, being designed for pleasure and ornament, is to be placed in the most conspicuous part, that is, next to the back front of the house; and the two latter being designed for use, should be placed less in sight. But though the fruit and kitchen-gardens as here mentioned as two distinct gardens, yet they are now usually in one; and that with good reason, since they both require to be placed out of the view of the house. See *Kitchen-Garden*.

In the choice of a place proper for a garden, the most essential points to be considered are the situation, the soil, the exposure, water, and prospect.

I. As to the situation, it ought to be such a one as is wholesome, and in a place neither too high nor too low; for if a gar-

den be too high, it will be exposed to the winds, which are very prejudicial to trees; and if it be too low, the dampness, the vermin, and the venomous creatures that breed in ponds and marshy places, add much to their insalubrity. The most happy situation is on the side of a hill, especially if the slope be easy, and in a manner imperceptible; if a good deal of level ground be near the house; and if it abounds with springs of water; for, being sheltered from the fury of the winds, and the violent heat of the sun, a temperate air will be there enjoyed; and the water that descends from the top of the hill, either from springs or rain, will not only supply fountains, canals, and cascades for ornament, but when it has performed its office, will water the adjacent valleys, and, if it be not suffered to stagnate, will render them fertile and wholesome. Indeed if the declivity of the hill be too steep, and the water be too abundant, a garden on the side of it may frequently suffer, by having the trees torn up by torrents and floods; and by the tumbling down of the earth above, the walls may be demolished, and the walks spoiled. It cannot, however, be denied, that the situation on a plain, or flat, has several advantages which the higher situation has not: for floods and rain commit no damage; there is a continued prospect of champaigns, intersected by rivers, ponds, and brooks, meadows and hills covered with woods or buildings; besides, the level surface is less tiresome to walk on, and less chargeable, than that on the side of a hill, since terrace walks and steps are not there necessary; but the greatest disadvantage of flat gardens, is the want of those extensive prospects which rising grounds afford.

2. A good earth, or soil, is next to be considered: for it is scarce possible to make a fine garden in a bad soil; there are indeed ways to meliorate ground, but they are very expensive: and sometimes when the expence, has been bestowed of laying good earth three feet deep over the whole surface, a whole garden has been ruined, when the roots of the trees have come to reach the natural bottom.

To judge of the quality of the soil, observe whether there be any heath, thistles, or such like weeds growing spontaneously in it; for they are certain signs that the ground is poor. Or if there be large trees growing thereabouts, observe whether they grow crooked, ill shaped, and grubby; and whether they are of a faded green, and full

full of moss, or infested with vermin; if this be the case, the place is to be rejected: but, on the contrary, if it be covered with good grass fit for pasture, you may then be encouraged to try the depth of the soil. To know this, dig holes in several places, six feet wide, and four feet deep; and if you find three feet of good earth, it will do very well; but less than two, will not be sufficient. The quality of good ground is neither to be stony, nor too hard to work; neither too dry, too moist, nor too sandy and light; nor too strong and clayey, which is the worst of all for gardens.

3. The next requisite is water, the want of which is one of the greatest inconveniences that can attend a garden, and will bring a certain mortality upon whatever is planted in it, especially in the greater droughts that often happen in a hot and dry situation in summer; besides, its usefulness in fine gardens for making fountains, canals, cascades, &c. which are the greatest ornaments of a garden.

4. The last thing to be considered, is the prospect of a fine country; and though this is not so absolutely necessary as water, yet it is one of the most agreeable beauties of a fine garden: besides, if a garden be planted in a low place that has no kind of prospect, it will not only be disagreeable, but unwholesome.

In the laying out and planting of gardens, the beauties of nature should be always studied; for the nearer a garden approaches to nature, the longer it will please. The area of a handsome garden may take up thirty or forty acres, but not more; and the following rules should be observed in the disposition of it. There ought always to be a descent at least three steps from the house to the garden; this will render the house more dry and wholesome, and the prospect on entering the garden more extensive. The first thing that should present itself to view, should be an open lawn of grass, which ought to be considerably broader than the front of the building; and if the depth be one half more than the width, it will have a better effect: if on the sides of the lawn there are trees planted irregularly, by way of open groves, the regularity of the lawn will be broken, and the whole rendered more like nature. For the convenience of walking in damp weather, this lawn should be surrounded with a gravel walk, on the outside of which should be borders three or four feet wide for flowers: and from the back of these, the prospect will be agreeably terminated

by a slope of ever-green shrubs, which, however, should never be suffered to exclude agreeable prospects, or the view of handsome buildings. These walks may lead through the different plantations, gently winding about in an easy natural manner, which will be more agreeable than either those long straight walks, too frequently seen in gardens, or those serpentine windings, that are twisted about into so many short turns, as to render it difficult to walk in them: and as no garden can be pleasing where there is a want of shade and shelter, these walks should lead as soon as possible into plantations, where persons may walk in private, and be sheltered from the wind. Where the borders of the gardens are fenced with walls or pales, they should be concealed with plantations of flowering-shrubs intermixed with laurels, and other ever-greens, which will have a good effect, and at the same time conceal the fences, which are disagreeable, when left naked and exposed to the sight. Groves are the most agreeable parts of a garden, so that there cannot be too many of them; only that they must not be too near the house, nor be suffered to block up agreeable prospects. To accompany parterres, groves opened in compartments, quincunxes, and harbour-work with fountains, &c. are very agreeable. Some groves of ever-greens should be planted in proper places, and some squares of trees of this kind may also be planted among the other wood. See *Quincunx*, &c.

Narrow rivulets, if they have a constant stream, and are judiciously led about a garden, have a better effect than many of the large stagnating ponds or canals so frequently made in large gardens. When wildernesses are intended, they should not be cut into stars and other ridiculous figures, nor formed into mazes or labyrinths, which in a great design appear trifling. Buildings, statues, and vases, appear very beautiful; but they should never be placed too near each other: magnificent fountains are also very ornamental; but they ought never to be introduced, except there be water to keep them constantly running. The same may also be observed of cascades and other falls of water. See *Cascades*, *Fountains*, &c.

In short, the several parts of a garden should be diversified; but in places where the eye takes in the whole at once, the two sides should be always the same. In the business of designs, the aim should be always at what is natural, great, and noble

noble. The general disposition of a garden, and of its parts, ought to be accommodated to the different situations of the ground, to humour its inequalities, to proportion the number and sorts of trees and shrubs to each part, and to shut out from the view of the garden no objects that may become ornamental. And before a garden is planned out, it ought ever to be considered, what it will be when the trees have had twenty years growth. *Miller's Gard. Dict.*

GARDENING, a branch of agriculture, containing the cultivation of gardens. See the preceding article.

GARGARISM, in medicine, in a large sense, every collution of the mouth; but, strictly speaking, it signifies a liquid medicine, appropriated to affections of the mouth, gums, fauces, larynx, and sometimes of the head, received into the mouth, and there used by way of collution, without deglutition.

GARNET, *Garnatus*, in natural history, a very beautiful gem, of a red colour, with an admixture of bluish.

When pure and free from blemishes, it is little inferior, in appearance, to the oriental ruby, though only of a middle degree of hardness between the sapphire and common crystal. It is found of various sizes, from that of a pin's head to an inch in diameter. Among our lapidaries and jewellers, genuine garnets are known by different names, according to their different degrees of colour.

They are also, very properly distinguished into the oriental and occidental kinds, as being found in Europe as well as the East-Indies. The oriental ones are principally brought from Calicut, Cananor, and Cambay; and the European ones are common in Italy, Hungary, and Bohemia. Some authors have supposed the deeper-coloured garnet to be the same with the carbuncle of the ancients, from which it really differs; since, on receiving the sun's beams, it never gives so true a fire-colour as the carbuncle. See *Carbuncle*.

GARRISON, in the art of war, a body of forces, disposed in a fortress, to defend it against the enemy, or to keep the inhabitants in subjection; or even to be subsisted during the winter season; hence, garrison and winter-quarters are sometimes used indifferently, for the same thing; and sometimes they denote different things.

GARRISON-TOWN, a strong place

in which troops are quartered, and to do duty, for the security thereof, keeping strong guards at each port, and a main guard in the market-place.

Order of the GARTER, a military order of knighthood, the most noble and ancient of any in the world, instituted by Edward III. This order consists of twenty-six knights companions, generally princes and peers, whereof the king of England is the sovereign or chief. They are a college or corporation, having a great or little seal.

Their officers are a prelate, chancellor, register, king at arms, and usher of the black rod. They have also a dean with twelve canons, and petty canons, vergers, and twenty-six pensioners, or poor knights. The prelate is the head. This office is vested in the bishop of Winchester, and has ever been so. Next to the prelate is the chancellor, which office is vested in the bishop of Salisbury, who keeps the seals, &c. The next is the register, who by his oath is to enter upon the registry the scrutinies, elections, penalties, and other acts of the order, with all fidelity. The fourth officer is garter, and king at arms, being two distinct offices united in one person. Garter carries the rod and scepter at the feast of St. George, the protector of this order, when the sovereign is present. He notifies the elections of new knights, attends the solemnity of their installations, carries the garter to the foreign princes, &c. He is the principal officer within the college of arms, and chief of the heralds. See *King at Arms*.

All these officers, except the prelate, have fees and pensions. The college of the order is seated in the castle of Windsor, with the chapel of St. George, and the chapter-house, erected by the founder for that purpose. The habit and ensign of the order are a garter, mantle, cap, george, and collar. The first were assigned the knights-companions by the founder; and the george and collar by Henry VIII. The garter (see plate XX. fig. 1.) challenges preheminance over all the other parts of the dress, because from that the noble order is denominated; that it is the first part of the habit presented to the foreign princes, and absent knights, who, and all other knights elect, are therewith first adorned; and it is of so great honour and grandeur, that by the bare investiture with this noble ensign, the knights are esteemed companions of the greatest military order in the world. It is worn

Order of the GARTER.

Facing Garter.



Fig. 2.



Fig. 3.



Fig. 5.

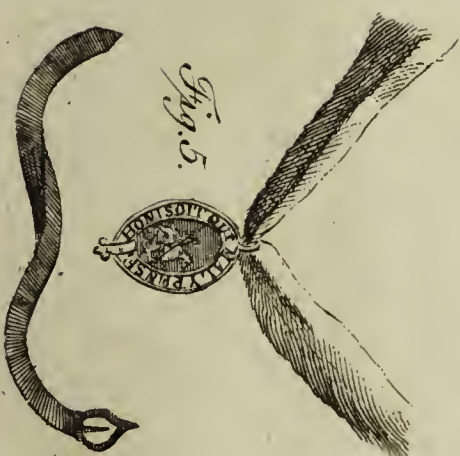
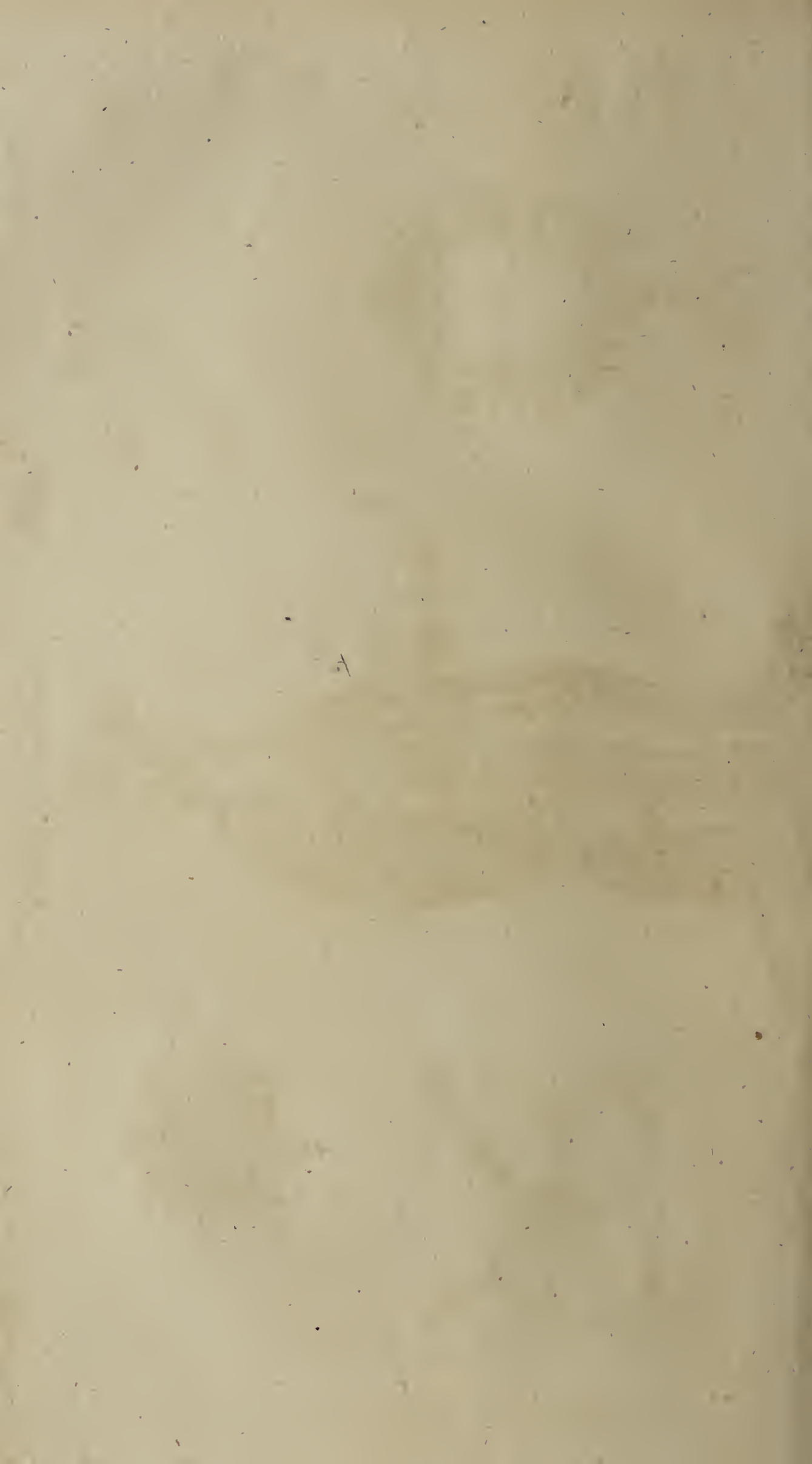


Fig. 4.





on the left leg between the knee and calf, and is enamelled with this motto, **HONI SOIT QUI MAL Y PENSE**; i. e. "Shame to him that thinks evil hereof." The meaning of which is, that king Edward having laid claim to the kingdom of France; retorted shame and defiance upon him that should dare to think amiss of the just enterprize he had undertaken, for recovering his lawful right to that crown; and that the brevery of those knights whom he had elected into this order, was such as would enable him to maintain the quarrel against those that thought ill of it.

The mantle (*fig. 2.*) is the chief of those vestments made use of upon all solemn occasions. The colour of the mantle is by the statutes appointed to be blue. The length of the train of the mantle only distinguishes the sovereign from the knights-companions. To the collar of the mantle is fixed a pair of long strings, anciently wove with blue silk only, but now twisted round, and made of Venice gold and silk, of the colour of the robe, with knobs, or buttons, and tassels at the end. The left shoulder of the mantle has from the institution been adorned with a large garter; with the device **HONI SOIT**, &c. Within this is the cross of the order, which was ordained to be worn at all times by king Charles I. At length the star was introduced, being a sort of cross irradiated with beams of silver. *Fig. 3.*

The collar (*fig. 4.*) is appointed to be composed of pieces of gold in fashion of garters, the ground enamelled blue; and the motto gold. See *Collar*.

The manner of electing a knight-companion into this most noble order, and the ceremonies of investiture, are as follow. When the sovereign designs to elect a companion of the garter; the chancellor belonging to this order draws up the letters, which passing both under the sovereign's sign manual and signet of the order, are sent to the person by garter principal king at arms, and are in this manner, or to the same effect. "We, with the companions of our most noble order of the garter; assembled in chapter, holden this present day at our castle at Windsor; considering the virtuous fidelity you have shewn; and the honourable exploits you have done in our service, by vindicating and maintaining our right, &c. have elected and chosen you one of the companions of our order. Therefore, we require you to make your speedy repair unto us, to receive the en-

signs thereof, and be ready for your installation upon the --- day of this present month, &c."

The garter, which is of blue velvet bordered with fine gold wire, having commonly the letters of the motto of the same; is, at the time of election, buckled upon the left leg, by two of the senior companions, who receive it from the sovereign, to whom it was presented upon a velvet cushion by garter king at arms; with the usual reverence; whilst the chancellor reads the following admonition, enjoined by the statutes. "To the honour of God omnipotent, and in memorial of the blessed martyr St. George, tye about thy leg, for thy renown, this noble garter; wear it as the symbol of the most illustrious order, never to be forgotten; or laid aside; that thereby thou mayest be admonished to be courageous, and having undertaken a just war in which thou shalt be engaged, thou mayest stand firm, valiantly fight, and successively conquer."

The principal garter being thus buckled on, and the words of its signification pronounced; the knight elected is brought before the sovereign; who puts about his neck, kneeling; a sky-coloured ribbon; (*fig. 5.*) whereunto is appendant; wrought in gold within the garter; the image of St. George on horseback, with his sword drawn, encountering with the dragon. In the mean time, the chancellor reads the following admonition: "Wear this ribbon about thy neck, adorned with the image of the blessed martyr and soldier of Christ, St. George, by whose imitation provoked; thou mayest so overpass both prosperous and adverse adventures; that having stoutly vanquished thy enemies both of body and soul, thou mayest not only receive the praise of this transient combat, but be crowned with the palm of eternal victory."

Then the knight elected kisses the sovereign's hand; thanks his majesty for the great honour done him, rises up, and salutes all the companions severally, who return their congratulations. *Fig. 2.* exhibits a view of a knight of the garter in the habit of this order.

Since the institution of this order, there have been eight emperors, and twenty-eight kings; besides numerous sovereign princes, enrolled as companions thereof. Its origin is somewhat differently related; the common account is, that it was erected in honour of a garter of the countess of Salisbury, which she dropped dancing with

king Edward, and which that prince picked up; but our best antiquarians think it was instituted on account of the victory over the French at Cressy, where the king ordered his garter to be displayed as a signal of the battle.

* **GASCOIGNE** (Sir **WILLIAM**) lord chief justice of the king's bench, was born at Gawthorp, in Yorkshire, in 1350, and being bred to the law, was, in 1398, on the accession of Henry IV. raised to the rank of chief justice of the king's bench. He distinguished himself by his integrity, loyalty, and inflexible justice, and particularly by a memorable transaction in the latter end of that reign. A servant of the prince of Wales, afterwards Henry V. being arraigned for felony, at the king's bench bar; the prince, his master, hastened to the court, and not only ordered Sir William to release him, but attempted his rescue. When being opposed by the lord chief justice, who ordered him to leave the prisoner and depart, he rushed with fury up to the bench, and struck that judge, while he was sitting in the execution of his office. Upon which Sir William, after some grave expostulations on this outrage and unwarrantable interruption of the course of justice, committed that young prince to the king's bench prison, there to wait his father's pleasure; and the royal youth was so struck with the reproof, that he submitted to that disgraceful punishment with a calmness as sudden and surprising as the offence which occasioned it. The king, on hearing the affair, said, he thanked God for having given him both a judge who knew how to administer, and a son who could obey justice. This action had a happy effect on the prince, who had for some time led a dissolute life; but he now became reformed, and being soon after raised to the throne, by the title of Henry V. was far from shewing the least resentment against Sir William, who died on the 17th of December, 1413.

GASTRIC, in general, something belonging to the stomach.

GASTRIC VESSELS, in anatomy, the arteries and veins of the stomach.

GATE, in architecture, a large door giving entrance into a city, town, castle, palace, or other considerable building: or a place giving passage to persons, horses, coaches, or wagons, &c. As to their proportion, the principal gates for entrance through which coaches and wagons are to pass, ought never to be less than seven feet in breadth, nor more than twelve,

which last dimension is fit only for large buildings. The height of a gate is to be one and a half of the breadth, and somewhat more; but as for the common gates in inns, under which wagons go loaded with hay, straw, &c. the height of them may be twice their breadth.

GATE, in the manage, the going or pace of a horse.

GAVELET, in law, an ancient and special cessavit used in Kent, where the custom of gavel kind continues, by which the tenant, if he withdraws his rent and services due to the lord, forfeits his lands and tenements.

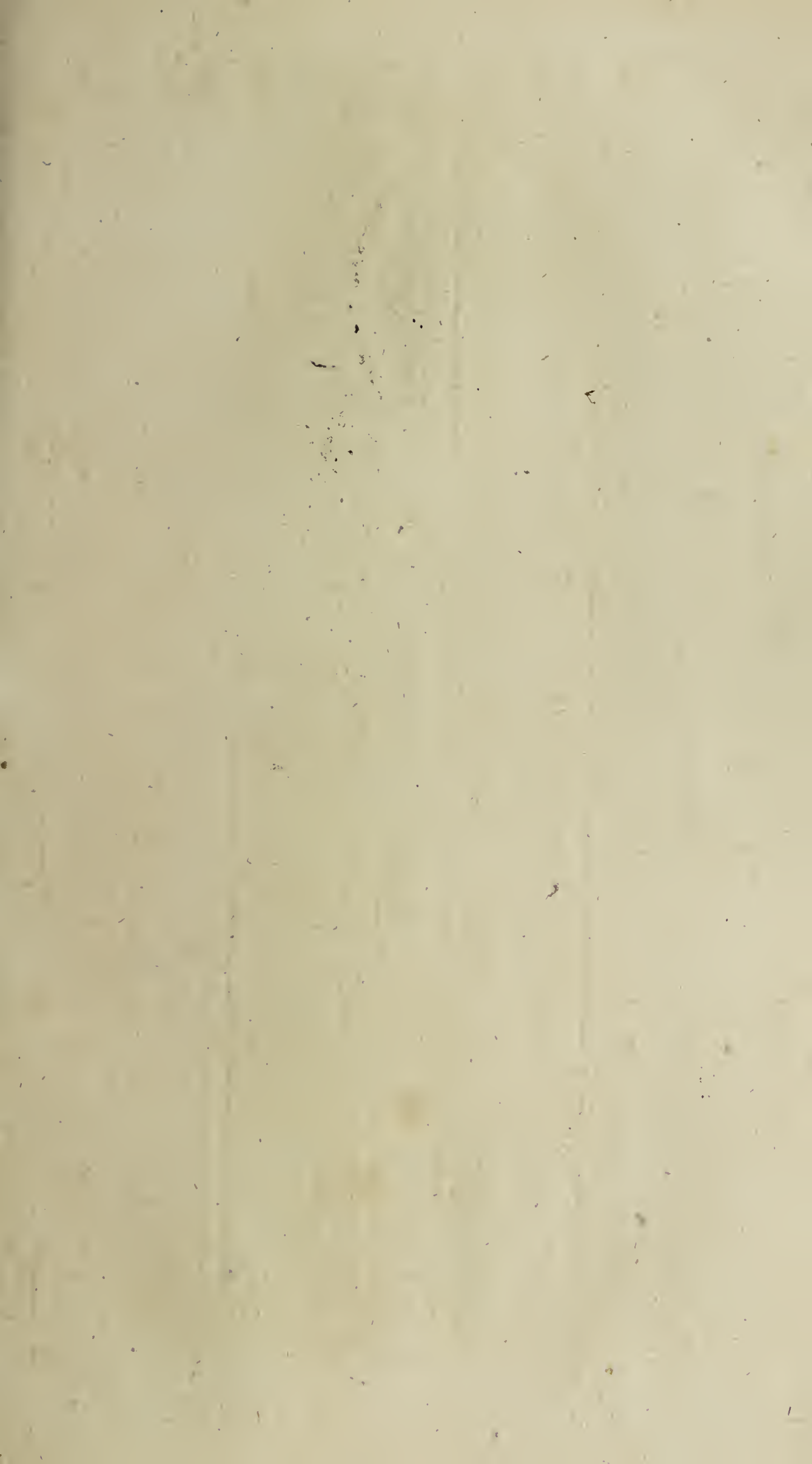
GAVELET, in London, is a writ used in the hustings, given to lords of rents in the city of London.

GAVELKIND, a tenure or custom belonging to lands in the county of Kent, by which the lands of the father are, at his death, equally divided among all his sons; or the land of a deceased brother, in case he leaves no issue, among all the brethren. This is by some called ancient socage-tenure; the custom came from our Saxon ancestors, among whom the inheritance of lands did not descend to the eldest, but to the sons all alike; and the reason why it was retained in Kent is, because the Kentish men were not conquered by the Normans in the time of William I. The particular customs attending this tenure are, that the heir, at the age of fifteen, may give or sell his lands in gavelkind; and though the father is attainted of treason and felony, and suffers death, the son shall inherit. A wife shall be endowed of a moiety of the gavelkind-lands, of which her husband died seised, during her widow-hood. Likewise a husband may be tenant by curtesy of half his wife's lands, without having any issue by her; but if he marries again, not having issue, he forfeits his tenancy.

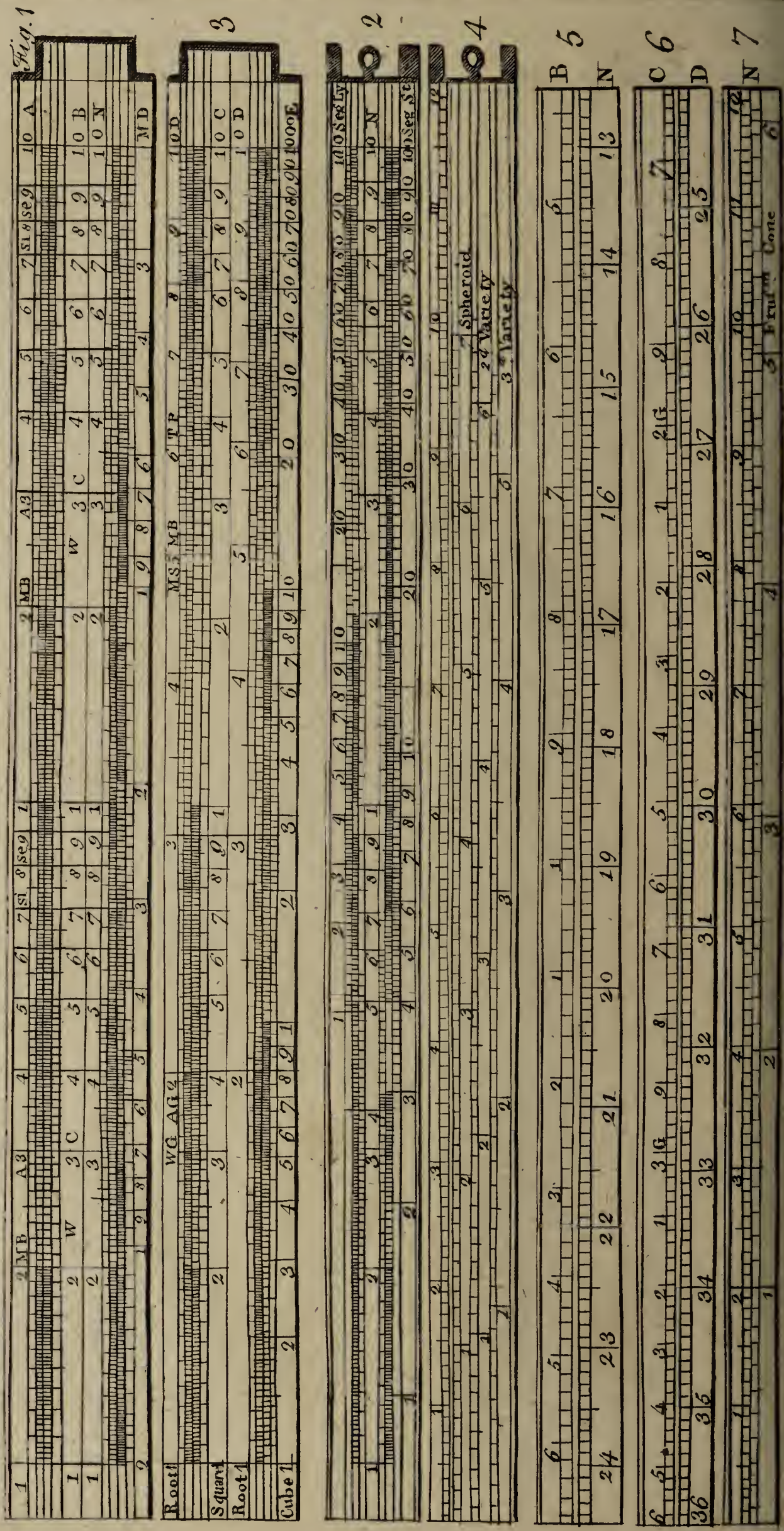
GAUGE-POINT, of a solid measure, the diameter of a circle, whose area is equal to the solid content of the same measure. Thus, the solidity of a wine-gallon being 231 cubic inches, if you conceive a circle to contain so many inches, the diameter of it will be 17.15; and that will be the gauge-point of wine-measure.

GAUGER, a king's officer, appointed to examine all tuns, pipes, hogheads, and barrels of wine, beer, ale, oil, honey, &c. and give them a mark of allowance, before they are sold in any place within the extent of his office.

GAUGING,



EVERARD'S SLIDING RULE.



GAUGING, the art of measuring the contents of all kinds of vessels, to determine the quantity they contain.

Gauging is a branch of stereometry. The principal vessels that come under its operation are pipes, barrels, rundlets, and other casks; also coolers, fats, backs, stills, &c.

The solid content of cubical, parallelepipedal, and prismatical vessels is found in cubic inches, &c. by multiplying the area of the base by the perpendicular altitude. And the area of cylindrical vessels is found by multiplying the area of the circular base by the perpendicular altitude.

Before the content of a cask can be known, its form or shape must be considered; for though the diameters and length of one cask may be equal to those of another, yet one of them may contain several gallons more than the other; and therefore the content of all casks cannot be found by the same rule. Most writers, therefore, in treating of this subject, have taken it for granted, that every common cask is in one of the following solids, viz.

1. The middle frustum of a spheroid.
2. The middle frustum of a parabolical spindle.
3. The middle frustum of two parabolical conoids abutting upon one common base.
4. The middle frustum of two cones abutting upon one common base.

Accordingly they have laid down rules for finding the contents of those solids, and by those rules they suppose the content of any cask may be found.

See the method of finding the area of these figures under their proper articles.

From what has been said, it follows, that, if we are not exact in assigning the cask its true form, it is impossible we should ever be exact in ascertaining its contents.

Now it is evident to those conversant in these affairs, that there never was any cask in the shape of any one of those solids whose names they bear, unless it can be supposed that it was effected by chance, the cooper never intending them for such: and though it should be admitted that a cask may approach nearly to the form of such a solid, yet what officer had any rule to direct in ascertaining its true form, or to which of the varieties it belonged? Whence it follows, that the best method of gauging all kinds of casks, is to reduce them to cylinders; that is, to find a mean

diameter between the head and the bung, whence its content will always be found exceedingly near the truth. The following example will explain this method.

Rule.—To the square of the bung diameter, add the square of the head, and four times the square of the mean diameter: multiply this sum by the length of the cask, and divide by 2154,3 for ale, and by 1764,71 for wine, which will give the content respectively.

GAUGING-Rule is an instrument commonly made of box, and sometimes ivory, exactly a foot long, one inch and two tenths broad, and 3-4ths of an inch thick.

Description of the GAUGING-RULE. This instrument consists of four parts, viz. a rule and three small scales or sliding piece fitted nicely with grooves to slide in it.

The first marked B N, to slide by the line A, the second marked C D, to slide between the lines D and E, (*Plate XXI. fig. 1.*) and the third marked N, (*fig. 2.*) slides in the edge of the rule between the two lines marked seg. L y, seg. S t. When the sliders B and C are drawn out to their due extent, the whole rule will be three feet in length.

Of the first face of the rule, *fig. 3.*—On the first face of the sliding-rule here described, are placed four lines of numbers; the first line of numbers consist of two radius's, and is numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10; and then again, 2, 3, 4, 5, 6, 7, 8, 9, 10. (*fig. 3.*)

On this line are placed several brass center pins. The first in the first radius at 2150,42, and the third likewise at the same number taken at the second radius, having M B set to them, signifying that the aforesaid number represents the cubic inches in a malt bushel; the second and fourth center pins are set at the number 282, on each radius; they have the letter A set to them, signifying that the aforesaid number represents the cubic inches in an ale gallon, and the W on the line B, stands at 231, being the cubic inches in a wine gallon: you may see it is placed both in the first and second radius, the C in the same line being placed at 3.14, which is the circumference of a circle whose diameter is unity.

The fourth line on the first face is a broken line of numbers of two radius's, numbered 2, 1, 9, 8, 7, 6, 5, 4, 3, 2, 1, 9, 8, 7, 6, 5, 4, 3. The number 1 is set against M B of the first radius of

the line A; this line hath M D. set to it, signifying malt depth. Note, the little long black dots over the center pins are put directly over the proper numbers. This line of numbers hath A placed at the end thereof, and is called A for distinction's sake.

2. The second and third line of numbers which are on the sliding-piece B N, (and which may be called but one line) are exactly the same with the first line of numbers; the little black dot that is near the division 7, on the first radius, having S i set after it, is put directly over .707, which is the side of a square inscribed in a circle whose diameter is unity. The black dot near unto the figure 9, after which is written S e, is set directly over .886, which is the side of a square equal to the area of a circle whose diameter is unity.

Of the second face of the rule, *fig. 1.*

3. The second face of the rule has one single line of numbers marked D, and numbered 1, 2, 3, &c. to 10. The line C (on the slider) is a double line of numbers of the same length with the single one D, and by this on the slider is the single line of numbers of D again repeated, which answers to the square and cube roots of the line C and E; the W G on the line D being placed at 17, 14 is the gauge point for wine, and A G placed at 18, 9 is the gauge point for ale gallons; the M S which stands at 46, 37 is the gauge point for a malt bushel in square measure; and M R being placed at 52, 32 is the gauge point for a malt bushel in round or circular measure; the T P which stands at 6, 32 is the gauge point, for a pound of tallow net; the line marked E on the second face of the rule, is a triple line of numbers, and is numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 1, which 1 stands for 10, the next line being numbered 1, 2, 3, &c. to 10, which 10 stands for 100, the third line being numbered 1, 2, 3, &c. to 1000, having E after it, and therefore is called the line E for distinction's sake. Its use is to find the cube root of any number, and to calculate diagonal lines for any measure or cask whatsoever.

4. The two lines of numbers which are on the sliding-piece marked C, are exactly the same as on the sliding-piece on the other side the rule.

Of the third face (or edge) of the rule.

—On one edge of the rule (*fig. 2.*) are placed two lines of segments of a spheroidal cask, each numbered 1, 2, 4, &c. to

100; the first is for finding the ullage of a cask taken as the middle frustum of a spheroid, lying with its axis perpendicular to the horizon; this line is marked thus, seg. L y, the other line of segments, marked seg. S t, is for finding the ullage of a cask standing.

Between these two segments slides a line of numbers with a double radius, marked at the end with N; and at each end of the slider there is a brass stud for convenience of moving them to and fro with your thumb.

Of the fourth face (or edge) of the rule. —5. On the opposite face of the rule (*fig. 4.*) is placed a line of inches to 12 decimally divided; next to this lieth a line numbered with 1, 2, 3, &c. to 7, and at the end marked with spheriod, by help of which is found a mean diameter for a cask, in form of a middle frustum of a spheroid; next under this is a line for finding the mean diameter of a cask in form of the middle frustum of a parabolic spindle, called by gaugers, the second variety of casks; it is numbered 1, 2, 3, 4, 5, 6, and at its end is writ second variety; next under this lieth a line for finding the mean diameter of a cask of the third variety, that is, a cask formed by frustums of two parabolic conoids abutting upon a common base; it is numbered 1, 2, 3, 4, 5, and at the end thereof is writ a third variety.

Of the three sliding-pieces, *fig. 5.* and 6. —3. The above are all the lines on the four sides of the rule; but on the back-side of the two sliding-pieces is a line of inches from 13 to 36, when the two sliding-pieces are put end-ways together; and against that the corresponding gallons or hundred parts, that any small tub, or such like open vessel (from 13 to 36 inches diameter) will contain at one inch deep; these are commonly called (by the gaugers) the ale area's; and by drawing out of the first slider, any open vessel's diameter under 36 inches may be taken, and its area in ale gallons is shewn by inspection: if the tub be more than 24 and less than 36 inches diameter, then pin the first slider, fast, and draw out the other slider, and you have the diameter in inches and decimal parts of an inch of that tub, with the ale area answering to that diameter by inspection.

7. The inside of the little slider marked N, O, (*fig. 7.*) on the rule, is for reducing casks in the form of the frustum of a cone to a cylinder; as suppose the difference

ference between the head and bung of a cask to be 5.3, seek this in the line of inches, and against it you will find 3.4, which add to the head diameter, and the sum will be the mean diameter; that is, the diameter of a cylinder, (having the same length with the cask proposed) equal to the said cask.

Construction of the lines on the sliding-rule.—All the lines of numbers above described are made by one general rule, which is this; get a plate of brass, or copper, &c. of what length you design your line to be, and thereon draw three parallel lines, for the better distinguishing the divisions of the lines of numbers, and make a mark for the beginning of it; close by these parallel lines draw ten other parallel lines, and divide this into ten equal parts; one of which subdivide into 100 equal parts, which makes it a diagonal scale of 1000 equal parts; being thus prepared, look into the table of logarithms for the number 200, and against it you will find the logarithm 2,301030, rejecting the characteristic 2, and also the three last figures on the right hand 030, because the length of the radius is divided but into 1000 equal parts; take 301 from your diagonal scale in your compasses, and lay off that distance from the beginning of the line of numbers, and there place the figure 2 for the first prime. Again, to find the division for the second prime, look into the table of logarithms for the number 300, and you will find its logarithm to be 2,477121; reject the characteristic 2, and also the three last figures to the right hand, and take in your compasses from your diagonal scale, as before, the number 477, and lay off that distance from 1, at the beginning of the line of numbers, to 3. for the second prime: and so by proceeding thus you will complete all the prime numbers of one radius of your line of numbers.

The line called the malt depth, marked *MD*, is only the aforementioned line of numbers turned the contrary way; and is so ordered, that the number 1 on *MD*, may exactly stand even with, or against *MB* on the line *A*, and then all the other divisions will fall in their true places. By this means any number on *A* or *B*, multiplied by any number directly under it on the line *MD*, will always be equal to 2150.42, the number of inches in a malt bushel.

The lines of segments marked seg. *Ly*, and seg. *St*, may be put on the sliding-

rule in the following manner: let a cask be fixed upon, whose form agrees the nearest to the most common ones in practice, and suppose both its bung diameter, and length, divided into 100 equal parts, and planes drawn through each of them, viz. the first hundred (serving for the segment marked seg. *St*) all parallel to the heads, and the second hundred (serving for the segment marked seg. *Ly*) all parallel to that plane which passes thro' the length of the cask. Now if the measure in gallons of each of these slices to be found, and the last always added to the sum of the preceding ones, successively, we shall have two tables of measures; one for the segment standing, and the other for the segment lying. These lines of segments may be otherwise put on as thus: take a cask, in form of the middle frustum of a spheroid, whose head diameter is 24.37, bung diameter 30.0, and length 44.85. This cask filled with water will contain just 100 gallons.

Now to find against what number on the line of numbers of the sliding-place any division of the line of segments, for a cask lying, must stand, proceed thus: let just one gallon be drawn off, then take the wet inches of the bung diameter, which reserve; set the bung diameter to 100 on the intended line of segments, and against the reserved wet inches place 99 on the line of segments. This being done, draw off again just one gallon, and take the wet inches of the bung diameter, against which, the slider still remaining fixed as before, set 98; proceed in this manner, still drawing off one gallon each time, and carefully taking the wet inches of the bung diameter, until you have completed the line of segments for a cask lying.

The other segment line on the same face of the rule may be made in the same manner as this, by setting the aforesaid vessel upright, and making use of the length instead of the bung diameter. The construction of the lines on the other edge of the rule for the four varieties of casks, are thus: 1. If there be a cask, in form of the middle frustum of a spheroid, half the difference of the squares of the bung and head diameters, added to the sum and half sum of the said squares, divided by 3, will be the square of the mean diameter, the square root of which will be the mean diameter. 2. Three tenths of the difference of the squares of the bung and head diameters, added to the sum and half

half sum of the said squares, and the whole divided by 3, will be the square of the mean diameter of a cask of the second variety. 3. To the sum and half sum of the squares of the bung and head diameters, add one tenth of the difference of the said squares, which sum, divided by 3, gives the square of the mean diameter of a cask of the third variety. 4. And lastly, from the sum and half sum of the squares of the bung and head diameters, subtract half the square of the difference of the diameters, and the remainder divided by 3, will be the square of the mean diameter of a cask of the fourth variety, or two equal frustums of a cone abutting upon a common base.

The inside of the two sliders are divided into inches, and every inch into ten equal parts; the other line, which lieth by the side of the line of inches, is the area in ale gallons and decimal parts of a gallon, which are made thus, viz. set unity on C to A G, the ale gauge point upon D, and against any diameter on D, is the area in ale-gallons, and decimal parts of a gallon, upon C.

So as the rule now stands, it is a table for all diameters whatsoever.

Note, The gallons are put in large figures, and the tenths of a gallon in smaller figures; every tenth of a gallon is divided into five by a small division, every one of which signifies two hundred parts of a gallon. By which I see, as the rule now stands, that a tub of 19 inches diameter will hold one gallon or something more, upon one inch of depth; and 24 inches diameter gives for the area 1 gallon and 6 tenths, 30 inches diameter gives 2 gallons and a half for the area, or content, at one inch deep.

Construction of the Four-foot GAUGING-ROD.—This rod is usually made of box-wood, and consists of four rules, each a foot long, and about half an inch square, joined together by three brass joints, by which means the rod is rendered four feet long, when the four rules are quite opened, and but one foot in length when they are folded together.

On the first face of this rod is placed a line of inches (and sometimes with it a line of ale areas) decimally divided, whose use is to take dimensions necessary for gauging vessels either for ale, wine, malt, &c.

Two diagonal lines are placed near the line of inches, one for ale, the other for wine.

The diagonal line of a cask is found by putting the rod in at the bung to the intersection of the head of the vessel, with the staves opposite to the bung hole.

By the bung, head, and length of a cask, we can find its diagonal line, as has been already shewn; whence, by having the contents of two similar casks, and the diagonal of one of them given, we can find the diagonal line of the other; for as the content of any cask in ale or wine gallons, is to the cube of its diagonal, so is the content of any other cask (similar to the former) to the cube of its diagonal, whose cube-root is the diagonal required.

Lines adapted to the London casks are placed on the other faces of this four-foot gauging-rod, viz. 1. A line for a butt standing. 2. For a butt lying; each of which contains 108 gallons, beer-measure. 3. A line for a hogshead containing 54 gallons. 4. A line for the barrel of 36 gallons. 5. A line for a kilderkin of 18 gallons. 6. A line for a firkin of nine gallons. Then to gauge any of these casks, there is no more to do than to put in your rod perpendicular at the bung, &c. and if the cask is not full, it gives you the quantity of liquor in the cask.

For the same purpose there are also lines put on four-foot gauging-rods for wine-measure; as 1. A ton of 252 gallons. 2. A butt of 126 gallons. 3. A puncheon of 84 gallons. 4. A hogshead of 63 gallons. 5. A tierce of 42 gallons. 6. A barrel of $31\frac{1}{2}$ gallons. 7. A rundlet of 18 gallons. And lastly, an anchor of 10 gallons. By these lines all brandies and oils are gauged.

These lines for London casks are made, by setting the vessel level, and pouring in one gallon of water, and then put the rod downright into the bung-hole (if it is a lying cask) or at the head (if a standing cask) and where the surface of the water cuts the rod, make the division for one gallon; then, pour in another gallon, and where the surface of the water cuts the rod, make divisions for two gallons; proceed thus, by pouring in one gallon successively after another, and make divisions at every place on the face of the rod, to which the water rises, till the cask be full, and then you have the scale for that cask properly divided. Proceed in the same manner for every one of the London casks abovementioned, and all the lines will be finished when figured.

Note, The divisions for quarts, marked

by dots on the rod, are made by pouring in a quart of water successively, and that you may not be at a loss to know what cask is in hand, the rod will shew you, for by measuring the depth of the bung, &c. if it cut 36, it is a barrel; if 18, it is a kilderkin, &c. and by the line for that cask you must take its ullage; that is, the quantity of liquor either drawn out, or remaining in the cask. See *Gunter's Line*.

GAVOTTA, or **GAVOTTE**, a kind of dance, the air of which has two brisk and lively strains in common time, each of which strains are played twice over; the first has usually four or eight bars, and the second contains eight, twelve, or more.

Tempi di **GAVOTTA**, is when only the time or movement of a gavotta is imitated, without any regard to the measure, or number of bars or strains.

GAWSE, or **GAWZE**, in commerce, a very slight, thin, open kind of stuff, made of silk, and sometimes of thread; there are also figured gawzes, and some with gold or silver flowers on a silk ground.

* **GAY (JOHN)** an excellent poet, born of an ancient family near Barnstable, in Devonshire, in 1688, and educated at the free-school there, after which he was put apprentice to a silk-mercator in London; but the shop soon becoming his aversion, in a few years his master, for a small consideration, willingly gave him up his indentures. Having thus procured his freedom from servitude, he followed the course of life to which he was drawn by his genius and inclination, and applied himself to poetry. This recommended him to the company and acquaintance of dean Swift, Mr. Pope, and others, who were struck with the open sincerity, the easiness of his temper, and undisguised simplicity of his manners. To this last gentleman he addressed the first fruits of his muse, intitled *Rural Sports*, printed in 1711, which met with some agreeable attestations of its merit. His purse was an unerring barometer of his spirits, which sinking with it, left him in the apprehension of a servile dependance, which he dreaded above any thing that could befall him. The clouds were, however, dispelled by the kindness of the duchess of Monmouth, who, in 1712, appointed him her secretary, with a handsome salary. This seasonable favour seating him in a coach, though not his own, produced his celebrated poem called *Trivia*, or the *Art of walking in the Streets*; and about two years after he published his pastorals, in-

titled *The Shepherds Week*. The most promising views now opened to him at court, he was caressed by some leading persons in the ministry, and his patroness rejoiced to see him taken from her house to attend the earl of Clarendon, as secretary in his embassy to the court of Hanover; but his hopes began and ended almost together; for queen Anne died within fifteen days after their arrival at Hanover. Soon after his return to England, he wrote his excellent farce called the *What d'ye call it*, the profits of which brought some useful recruits to his fortune. In 1720, he recruited his purse by a handsome subscription to his *Poems*, which he collected and printed in two volumes, quarto; but falling into the general infatuation of that year, he lost all his fortune in the South-Sea scheme. In 1724, he finished his tragedy intitled the *Captives*, which he had the honour of reading from the manuscript to queen Caroline, then princess of Wales, when her royal highness promised him farther marks of her favour, if he would write some fables in verse for the use of the duke of Cumberland. Accordingly he undertook the task, and published his excellent *Fables* in 1726, with a dedication to that prince. Upon the accession of his late majesty to the throne, he was offered the place of gentleman-usher to the young princess Louisa, a post which he thought beneath his acceptance; and being out of humour with the court, wrote his *Beggar's Opera*, which was brought upon the stage, at the theatre in Lincoln's-Inn-Fields, in the beginning of November, 1727, and had an unprecedented, and incredible success; for, besides its being acted sixty-three evenings, without interruption, and renewed the next season with success, it was played fifty times both at Bath and Bristol. The ladies carried about with them the favourite songs of it in fans, and houses were furnished with it in screens. His opera, intitled *Polly*, which was designed as a sequel to the former, was prohibited by the lord chamberlain from being represented on the stage. He also wrote a comedy, called the *Wife of Bath*, and *Archilles*, an opera, &c. He died at the duke of Queensbury's house, in Burlington-gardens, in December, 1732, and was interred in Westminster-abbey, where a monument was erected to his memory, by the duke and duchess of Queensbury, with the following epitaph, written by Mr. Pope, who had the highest friendship for him.

Of manners gentle, of affections mild;
 In wit a man, simplicity a child;
 Above temptation in a low estate,
 And uncorrupted ev'n among the great;
 A safe companion; and an easy friend,
 Unblam'd thro' life, lamented in thy end;
 These are thy honours! not that here thy
 bust
 Is mixt with heroes, or with kings thy
 dust,
 But that the worthy and the good shall say,
 Striking their pensive bosoms—Here lies
 G A Y.

GAZONS, in fortification, pieces of fresh earth, covered with grass, and cut in form of a wedge, about a foot long and half a foot thick, to line the outsides of works made of earth, as ramparts, parapets, &c.

GEERS, the trappings and other harness belonging to draught-horses or oxen.

GELATINOUS, in pharmacy and medicine, any thing approaching to the glutinous consistence of a gelatina, or jelly.

GELD, in our old customs, a Saxon word signifying money, or tribute: also a compensation for some crime committed.

GELDER-ROSE, the name by which some call the opulus, or water-elder.

GELDING, the operation of castrating any animal, particularly horses. This operation consists in cutting out the testicles; in performing which, three things are to be observed: first, regard is to be had to their age; next, to the season of the year; and lastly, to the state of the moon. For the first, if the operation is to be performed on a colt; he may be gelded at nine or fifteen days old, if the testicles be come down, as the sooner he is gelt, the better it will be for his growth, shape, and courage; though a horse may be gelt at any age, if proper care be taken in the cure. As for the second, the best time is about April or May, or else about the latter end of September. And for the third, the wane of the moon is the fittest time for performing this operation.

The manner of gelding is as follows: the beast being cast down on some soft place, the operator takes the stones between his foremost and his great finger, and slitting the cod, presses the stones forth: then taking a pair of nippers, made very smooth, either of steel, box, or brazil wood, he elaps the strings of the stones between them, very near to where the stones are set on, and presses them so hard, that there may be no flux of the blood; then, with a thin,

drawing canterizing iron, made red-hot, fears away the stone.

This done, he takes a hard plaster made of rosin, wax, and washed turpentine, well dissolved together, and melts it on the head of the strings: that being done; he fears them; and melts more of the salve; till he has laid a good thickness of it upon the strings: This being done to one stone, the nippers are loosened, and the like is done to the other; and the two slips of the cod are then filled with white salt, and the outside of the cod is anointed with hogs-grease; and thus they let him rise, and keep him in a warm stable; without tying him up.

If he swells much in his cods or sheath, they chase him up and down; and make him trot an hour in a day; and he soon recovers.

The manner of gelding a hog is as follows; the operator, after having made two cross slips, or incisions, on the midst of the stones, presses them out; and anoints the fore with tar: But another more general method, yet somewhat more dangerous; if not well done, is first to cut the stone on the top, and after having drawn that one forth; the operator puts in his fingers at the same slip, and; with a lancet, cuts the skin between the two stones; and by that slit presses out the other stone. Then having cleansed out the blood, he anoints the part with fresh grease: and thus there is but one incision made in the cod. Boar-pigs ought to be gelt about six months old; yet they are commonly gelded about three weeks or a month old.

GELDING of a Lamb may be performed from the age of three days to three weeks or more, in the following manner; one is to hold the lamb between his legs, or in his lap, and turn him on his back, holding his fore-feet upright together (but if any black spots are seen in his flank, he must not be cut at all); then the cutter holding the tip of the cod in his left hand, cuts the lap of it an inch quite away; which done, he, with the foremost fingers and thumbs of both hands, should softly slip down the cod over the stones, to the belly, and with his teeth; holding the left stone in his mouth, he draws it out softly the length of the string; after which he is to draw out the other stone in the same manner; then he anoints the lamb's flanks with fresh grease, and so lets him go, and keeps stirring him up and down for two or three hours.

GEM, *Gemma*, in natural history, a common

common name for all precious stones, of which there are two classes, the pellucid and semipellucid.

The bodies composing the class of pellucid gems are bright, elegant, and beautiful fossils; naturally and essentially compound, ever found in small detached masses, extremely hard, pellucid, and of great lustre; composed of a very firm and pure matter, without any admixture of earthy substance, giving fire with steel, not fermenting with acid menstrooms, and very difficultly calcinable in the fire.

The bodies composing the class of semipellucid gems, are stones naturally and essentially compound, not inflammable nor soluble in water, found in detached masses, and composed of crystalline matter debased by earth: however, they are but slightly debased, and are of great beauty and brightness, of a moderate degree of transparency, and are usually found in small masses.

Imitation or counterfeiting of GEMS in Glass. The art of imitating gems in glass, is too considerable to be passed without notice.

These gems are made of pastes, and are no way inferior to the native stones, when carefully made and well polished, in brightness or transparence, but want their hardness. See *Paste*.

The colour of all the counterfeit gems made of the several pastes, may be made deeper or lighter, according to the work for which the stones are designed; and it is a necessary general rule, that small stones for rings, &c. require a deeper colour, and large ones, a paler: besides the colours made from manganese, verdigrease, and zaffer, which are the ingredients commonly used, there are other very fine ones which care and skill may prepare. Very fine red may be made from gold; and one not much inferior to that from iron; a very fine green from brass or copper; a sky-colour from silver; and a much finer one, from the granates of Bohemia.

GEMELLUS, in anatomy, the name of two muscles, both of which are small, flat, and narrow, and situated almost transversely one above the other, between the tuberosity of the ischium and the great trochanter, immediately below the pyriformis, and parted by the tendon of the obturator internus.

GEMINI, the twins, in astronomy, one of the twelve signs of the zodiac, the third in order, beginning with aries. See *Sign* and *Zodiac*.

This constellation, according to different authors, contains from 24 to 89 stars. It is represented by the figure of two twin-children, looking each other affectionately in the face, and supposed to be Castor and Pollux.

GENDARMES, or GENS D'ARMES, in the French armies, a denomination given to a select body of horse, on account of their succeeding the ancient gendarmes, who were thus called from their being completely clothed in armour. The king's body guards, the light horse of the royal house, and the musqueteers, are at present reputed to belong to the gendarmerie. The grand gendarmes are a troop composed of about two hundred and fifty gentlemen, who guard the king's person. The king himself is their captain.

GENDER, *Genus*, among grammarians, a division of nouns, or names, to distinguish the two sexes. This was the original intention of gender; but, afterwards, other words which had no proper relation, either to the one sex or the other, had genders assigned them, which is at length established by custom. Hence genders vary according to the languages, or even according to the words introduced from one language into another. Thus *arbor*, in Latin, is feminine; but *arbre*, in French, is masculine; and *dens*, in Latin, is masculine; but *dent*, in French, is feminine. Nay, a gender has sometimes changed in the same language, according to time and occasion. Thus *navire*, *ship*, was anciently feminine in French, but is now masculine. In English we have no genders; indeed we express the difference of sex by different words; as horse, mare; boy, girl, &c. We have also twenty-four feminines distinguished from the males by varying the termination of the female into *esses*; as actor, actress; prince, princess; heir, heiress, &c. and we have a few words in which the feminine is distinguished from the masculine by the termination *ix*, as executor, executrix; administrator, administratrix, &c. which is all our language knows of anything like genders. The eastern languages, as well as the vulgar languages of the west, have only two genders, the masculine and the feminine. The Greek and Latin have besides, the neuter, common, and doubtful gender. They have also the epicene gender, which is not a different one, but serves promiscuously for either; including both the kinds under one single gender and termination: thus *vulpes*, a fox, though it signifies either the male or female,

male, is really of the feminine gender; in Latin. This is common to all languages that have them. The Latin and Greek, in the neuter gender, do not regard them, having no relation to the male or female sex, but what fancy gives them, and the termination of certain words. The Oriental languages frequently neglect the use of genders; and the Persian language has none at all, which is no disadvantage; the distinction of genders being entirely useless.

GENEALOGY, an enumeration of a series of ancestors; or a summary account of the relations and alliances of a person or family, both in the direct and collateral line.

GENERAL of an Army, in the art of war, he who commands in chief. See *Army*.

The office of a general is to regulate the march and encampment of the army; in the day of battle to choose out the most advantageous ground; to make the disposition of the army; to post the artillery; and where there is occasion, to send his orders by his aids de camp. At a siege he is to cause the place to be invested; to order the approaches and attacks; to visit the works, and to send out detachments to secure his convoys.

GENERAL is also used for a particular march, or beat of drum; being the first which gives notice, commonly in the morning early, for the infantry to be in readiness to march.

GENERATING Line, or Figure, in geometry, that which by its motion produces any other plane or solid figure. Thus, a right line moved any way parallel to itself, generates a parallelogram; round a point in the same plane, with one end fastened in that point, it generates a circle. One entire revolution of a circle, in the same place, generates the cycloid; and the revolution of a semi-circle round its diameter, generates a sphere, &c.

GENERATION, *Generatio*, in physiology, the act of procreating and producing a thing which before was not; or, it is the total change or conversion of one body into a new one, which retains no marks of its former state. Thus, we say, fire is generated, when we perceive it to be where before there was only wood, or other fuel; in the same manner a chick is said to be generated, when, we perceive it where before there was only an egg; or the egg is changed into the form of a chick. In generation there is not properly any production of new parts; but only a new modification, or manner of existence, of the old

ones. When almighty God, says Dr. Blair, created the world, he so ordered and disposed of the *materies mundi*, that every thing produced from it should continue so long as the world should stand. Not that the same individual species should always remain; for they were in process of time to perish, decay, and return to the earth from whence they came; but that every like should produce its like, every species produce its own kind, to prevent a final destruction of the species, or the necessity of a new creation. For which end he laid down certain regulations, by which each species was to be propagated, preserved and supported, till, in order and course of time, they were to be removed hence: for without that those very beings, which were created at first, must have continued to a final dissolution of all things; which almighty God, of his infinite wisdom, did not think fit. But that he might still the more manifest his omnipotence, he set all the engines of his providence to work, by which one effect was to produce another, by means of certain laws or rules, laid down for the propagation, maintenance, and support of all created beings. This his divine providence is called nature, and these regulations are called the laws or rules of nature, by which it ever operates in its ordinary course; and whatever recedes from that, is said to be preternatural, miraculous, or monstrous.

GENERATION of Animals. According to Aristotle, the males contain the principle, and the females the matter of generation: for though both were furnished with a seminal liquor, yet the semen of the males alone was prolific. The moderns, on the other hand, as well those who contend for the system of generation from eggs, as they who adopt that of the animalcules in the male seed, pretend that females have no such seminal liquor at all, and that what was commonly taken for it was some other animal fluid.

There are great and many difficulties, which attend the most plausible account of the first formation of the parts of an animal, and the beginning of motion in its fluids; for though both reason and experience convince us, that all the parts of an animal did exist before generation; yet how this matter comes to assume so very different a form, as that of an embryo, is by no means agreed on.

Parts of GENERATION. The parts of generation, in men, are the testicles, vasa deferentia, vesiculæ seminales, and penis. See *Testicle*, &c.

Those

Those in women, are the pudendum or vulva, the clitoris, nymphæ, vagina, uterus or womb, ovaries, and Fallopian tubes. See *Pudendum, Clitoris, &c.*

GENERATION of Fishes. The opinion of most naturalists, that the female fishes first deposit their spawn, and that the males afterwards eject the semen upon it, is denied by Linnæus; who thinks it impossible that the eggs of any animal should be impregnated out of its body. He thinks it much more probable, that the males always eject their semen some time before the females deposit their spawn; and that, by swallowing this semen, the spawn is impregnated in the body of the fish. Nay, he tells us, that he himself saw three or four females, in the spawning time, gather about the male, and greedily swallow the semen he ejected. This he observed in some species of the eel, perch, and especially the cyprinus; but he recommends farther enquiry to be made on this subject.

GENERATION of Insects is now certainly known to be from eggs; which the female deposits in places, where, at a proper season, they are hatched into animals like their parents; or into maggots, or worms, which, after several transformations, at last appear in the form of their parents.

GENERATION of Plants. The impregnation of the female palm-tree by the male, has been known in the most ancient times. Herodotus, the father of history, tells us, that the Greeks called some of these trees male, the fruit of which they bound to the other kind, which bears dates; that the small flies, wherewith the male abounded, might assist in ripening the fruit of the female-tree. The remote age in which Herodotus wrote, sufficiently apologizes for his believing, that what was really brought about by the farina fecundans of the male flower, was to be attributed to the insects frequently found therein, and which perhaps frequently carry this farina from the male to the female. The process of impregnation, according to Theophrastus, was this: while the male plant was in flower, they cut off a branch of these flowers, and scattered the dust and down therein upon the flowers of the female plant; by which means the female did not cast her fruit, but preserved them to maturity. This has been lately verified at Berlin, where a female palm-tree bore fruit for many years; but the fruit never ripened, and when planted, did not vegetate, merely because there was no male

palm in the place: for having procured a branch of male flowers from Leipzig, twenty German miles from Berlin, they suspended it over the female flowers of their tree; and the experiment succeeded so well, that the female tree produced more than an hundred perfectly ripe fruit; and the experiment being repeated, it bore above two thousand ripe fruit, which being planted produced young trees.

It is in the flowers of vegetables only, that the parts subservient to generation are produced; and these flowers are either male, female, or hermaphrodite. Male flowers are those possessed of the organs of generation, analogous to the male parts of animals; such are the stamina and apices, called, by Linnæus, filaments and antheræ. The female flowers are only endowed with parts like those, which perform the office of generation in females; and these are the pistil and its appurtenances, which Linnæus divides into three parts, the germen, style, and stigma. The hermaphrodite flower, which constitutes the great bulk of the vegetable creation, is possessed of all these parts in itself, and is therefore capable of propagating its species without any foreign assistance; which, by many incontestable experiments, it has been found neither the male nor female flower simply is able to do. The impregnation of hermaphrodite flowers may be performed within their own calyx; but before a separate female flower can be so, the farina fecundans of the male flower must necessarily be conveyed to it thro' the circumambient air; which is the reason why the quantity of the produce of such plants is much more precarious, than that of plants which have hermaphrodite flowers: for, if, during the flowering of these separate male and female plants, the weather proves either very wet or stormy, their produce of fruit will be very inconsiderable, from the spoiling or hasty dissipation of the male farina. Thus, independent of frosts, the fruit of the nut and filbert tree will be most numerous in those years, in which the months of January and February are the least stormy and wet, because at that time their flowers are produced. For the same reasons, a stormy or wet May destroys the chestnuts; and the same weather, in July, prodigiously lessens the crop of maize, or Indian corn, as its spikes of male-flowers stand lofty, and at a considerable distance from the female.

Some object to this theory of the generation of plants, from having observed some plants, which were termed female,

growing singly; and though at a very great distance from any male plants of the same kind, producing perfect fruits, which grow when sown. Mr. Miller tells us, he himself was staggered in his opinion, on having observed a female plant of white briony, which grew singly in a garden, where there were no other plants of the same kind; which, nevertheless, for several years, produced berries, which grew and flourished perfectly well. This put him upon examining the plant more carefully than he had done before, when a great many male flowers were found intermixed with the female ones; and he adds, that he has frequently observed the same in many other plants, which are generally male and female in distinct plants, yet have sometimes both sexes on the same plant.

GENESIS, among mathematicians, the formation or production of some figure or quantity.

GENESIS, among divines, a canonical book of the Old Testament, and the first of the Pentateuch. The Greeks gave it the name of Genesis, from its beginning with the history of the creation of the world. It includes the history of two thousand three hundred and sixty-nine years, and besides the history of the creation, contains an account of the original innocence and fall of man; the propagation of mankind; the rise of religion; the general defection and corruption of the world; the deluge; the restoration of the world; the division and peopling of the earth; and the history of the first patriarchs down to Joseph, at whose death it ends.

* GENEVA, the city and republic of. It is considerable for its antiquity, beauty, extent, strength, and advantageous situation, which renders it the bulwark and key of Switzerland, especially of the canton of Berne, which lying between France and Savoy, have always sufficient reason to distrust those two powers. It had formerly its particular earls, whose family was extinct in 1316. In 1526 they drove away all those who were in the interest of the duke of Savoy. Afterwards the bishop endeavoured to make them uneasy by every method which lay in his power, but the inhabitants defended themselves so well, that he was glad to transfer his see to Annecy, in the duchy of Savoy. Upon this the inhabitants embraced the reformed religion in 1535, and in 1584 they entered into solemn alliance with the cantons of Switzerland. However, the house of Sa-

voy did not abandon the project of seizing Geneva, for they made a fresh attempt, and had like to have succeeded. On the 12th of December, 1602, in a very dark night, the Savoyards attempted to scale the walls of Geneva, and above one thousand two hundred had got upon the ramparts, when a young man, who was going to conduct somebody home, perceived what they were about, and began immediately to cry out for help. He made so great a noise, that the inhabitants were under arms almost in a moment. Thirteen burgeses had the misfortune to be killed by the first fire; but their fellow citizens having repulsed the Savoyards, took sixty-seven, who were almost all officers; and the next day they hanged thirteen of the principal. However, the court of Turin took no notice of what passed; but thenceforward they never thought proper to renew their former pretensions.

The territory of Geneva is small, consisting only of thirteen parishes, but it is a fertile pleasant country. The villages are large, and well built; and the parishes are full of country seats, which belong to the citizens. The fruits are very good, and though they have but little white wine, they have plenty of red. They sow nothing but wheat, which yields excellent crops; but the republic keeps a plentiful magazine of all sorts of corn, which, in times of dearth, they sell at a reasonable price. The bakers are obliged at all times to buy corn from hence.

Geneva is seated at a corner of the lake, Lemán, at the place where the Rhone runs out of this lake, to take its course through part of France. This river divides Geneva into two parts. The greatest, which is properly the city, stands on the south side of the river. It is partly built on a plain, and comprehends the quarter called the Rues Basses, the low streets; and partly upon a hill, which rises gradually to the quarter called the Town. The ascent in some places is very gentle, and in others pretty steep. The other part of the city called St. Gervase is on the north side of the Rhone. In the middle of the river is an island seven hundred feet in length, and two hundred in breadth, which is full of inhabitants. The two parts of the city are joined to the island, on one side by a single bridge, and on the other by two large ones, constructed with wood.

This city is very large, and proportionably populous, many having settled here, partly on account of religion, and partly for

G E N

for trade ; infomuch, that it contains upward of thirty thousand inhabitants. Hence the superb houses of private persons become every day more numerous, and are built of hewn stone. Indeed, some think they are rather too magnificent for a little republic. Among the public buildings we may take notice of St. Peter's church, which was formerly the cathedral. It is antique, spacious, and built in the form of a cross. In the nave behind the pulpit, there are the images of the twelve apostles, in wood, and as the doors of the church are always open, it is no uncommon thing to see a Roman Catholic on his knees before these statues. There is a large monument erected to the memory of the duke of Rohan, in black marble, upon which stands his statue of white marble. He died in 1638, and his wife Margaret de Sully caused this mausoleum to be built. It was this prince that made the grand walk and mall without the gates of the city, planted on each side with trees. Near the church are two lofty chapels, which serve for public schools, where they read lectures in theology and philosophy. They likewise serve for Italian and German churches. The Germans have likewise another church for the Lutheran persuasion. A few paces from the cathedral is the town-house, remarkable for a stair-case paved with small flint stones, and so contrived that a person may ride up it on horseback, or in a coach. In the porch there are a collection of ancient urns, in which were buried the bones and ashes of the dead, in the times of paganism. They have likewise a great many ancient medals, and other monuments of antiquity.

From the town-house you may go to the arsenal, which is handsome, well kept, and has arms and ammunition in abundance. There they shew the scaling ladders, dark lanterns, petards, and other machines brought by the Savoyards in 1602. On the other side of the city is the college, where there is a library containing a great many ancient manuscripts, and various curiosities. The college and academy were built since the Reformation, and have never been without men of distinguished merit ; though Geneva was scarce known out of Swisserland before that time.

The inhabitants of Geneva are polite, witty, and gay, and much addicted to pastimes, infomuch, that this city is now called the court of the Alps, whither the protestant cantons send their children to im-

G E N

prove themselves in the languages. The French protestants have contributed greatly to the refinement, or as others say, to the corruption of the Genevois. It is certain they have much forgotten the advice of Calvin a little before his death, who recommended to them above all things an exemplary modesty and humility ; and as great a simplicity in their manners as in their religion.

Geneva is 70 miles north-east of Lyons, 130 north-by-west of Turin, and 230 south-east of Paris. Lat. 46 deg. 13 min. N. Long. 6 deg. 15 min. E.

GENEVA, or GIN, among distillers, an ordinary malt-spirit, distilled a second time, with the addition of some juniper-berries. See *Juniper*.

Originally, the berries were added to the malt in the grinding ; so that the spirit thus obtained was flavoured with the berries from the first, and exceeded all that could be made by any other method. At present, they leave out the berries entirely, and give their spirits a flavour by distilling them with a proper quantity of oil of turpentine ; which, though it nearly resembles the juniper-berries, has none of their valuable virtues.

GENIAL, an epithet given by the pagans to certain gods supposed to preside over generation.

GENICULI, among botanists, the knots or joints in the stalks of plants ; whence they are denominated geniculate plants.

GENIPA, in botany, a genus of plants.

GENISTA, GREEN-WEED, or DYER'S-WEED, a genus of plants.

GENITIVE, in grammar, the second case of the declension of nouns. In English they prefix the particle *of*, in French *de*, or *du*, &c. though in strictness there are no cases in either of these languages ; as they do not express the different relations of things by different terminations, but by additional prepositions, which is otherwise in the Latin, &c.

In the Hebrew tongue, the genitive case is marked in a very different manner from that of the Greek and Latin ; for whereas in those languages the noun governed is varied, in the Hebrew the noun governing undergoes the alteration.

GENIUS, a good or evil spirit, or demon, whom the ancients supposed set over each person, to direct his birth, accompany him in life, and be his guard.

GENIUS, in matters of literature, &c. a natural talent or disposition to do one thing

thing more than another; or the aptitude a man has received from nature to perform well and easily that which others can do but indifferently, and with a great deal of pains.

From the diversity of genius, the difference of inclination arises in men, whom nature has had the precaution of leading to the employments for which she designs them, with more or less impetuosity, in proportion to the greater or lesser number of obstacles they have to surmount, in order to render themselves capable of answering this vocation. Thus the inclinations of men are so very different, because they follow the same mover, that is, the impulse of their genius.

* GENOA, a city of Italy, and capital of a republic, of that name. The situation is one of the most beautiful of any city in Italy, and is seen to the greatest advantage at the distance of a quarter of a league from the sea; its stately buildings, which have gained it the name of Superb, forming a glorious amphitheatre, gradually rising up the hill. This declivity, and the narrowness of the streets, exclude the use of coaches in Genoa, every body contenting themselves with going on foot, except the principal ladies, who are carried in chairs. To this narrowness of the streets it is owing that this city takes up so little of the plain beneath it. Besides, it is owing to this and the height of the houses, that the sun beams are not so excessive hot in summer, which contributes greatly to the healthfulness of the city.

The streets are exceedingly well paved, and in some parts with free-stone. Their having no carriages contributes greatly to the cleanliness of the streets; besides, every thing that may serve for manure is carefully gathered up and taken away.

Most of the houses are flat-roofed, or at least have a gallery on the top. The roofs are mostly covered with lavagna, a stone very much resembling slate; and these areas, which are planted with orange trees, form a sort of hanging gardens, which have a very pretty effect. Out of the rocks projecting into the sea, have been made several bastions, in some places two or three behind each other, and the length of these fortifications, with the lower town, is not much less than three miles. The number of guns mounted on all the works, for the defence of the city, is little less than five hundred. Genoa on the land side is fortified with a double

wall: the outermost of which is also the newest, and extends beyond the hill; it begins at the fanal, or light-house, and terminates at the river Bisagno. It is ten Italian miles in circumference, and such is the inequality of the country, that it takes up three hours to ride round it. This wall is of too great an extent to be of any considerable service, unless to keep out the banditti.

The religious buildings are thirty-seven parish and twenty collegiate churches, seventeen convents, and two large hospitals. The church of Annonciada is one of the most beautiful and magnificent of the whole city. It abounds with fine sculptures in marble, gilding, and painting; and, among the rest, a most admirable communion-piece. The Jesuits church is a good structure, which, over the great altar, has an excellent painting of Reubens, representing the circumcision of Christ, where the emotions of tenderness in the women standing by are expressed to admiration. There are other paintings and statues, which must give sensible pleasure to connoisseurs. At the foot of the stairs of the Jesuits college, are two large lions couchant in white marble. The court is surrounded with two lofty galleries, supported by a hundred pillars of marble, each of which cost an hundred Genoese scudi.

The chief manufactures here are velvets and damasks, besides silks, stuffs, brocades, lace, gloves, sweet-meats, fruits, oil, Parmesan cheese, anchovies, and drugs from the Levant. The high price of commodities, and the incommodiousness of the harbour, hinders their trade from flourishing so much as might otherwise be expected. The English have a consul here, but no merchants are settled here as at Leghorn; but French protestants flock here, and are well received.

The Roman catholic inhabitants are computed at one hundred and fifty thousand, and they are said to be extremely cunning, industrious, and inured to hardship, above all the rest of the Italians, which was likewise the character of the old Ligurians; and it is indeed no wonder, while the barrenness of the country continues, that the inhabitants should not change, since there is nothing makes men sharper, and sets their hands and wits at work more than want. The Italian proverb says of the Genoese, that they have a sea without fish, land without trees, men without faith, and women without modesty. However, the police is here, in several

several points, on a much better footing than in many cities of Italy, and the streets are so safe at night, that there is scarce a single instance of a person being murdered by assassins or robbers. No person, except foreigners and the eight officers of state, must be attended with above one footman, and she must be a lady of considerable rank, who is allowed a page over and above, who must not exceed fourteen years of age. Every married lady is attended by a gentleman, who, in the streets, walks before the chair, holds the holy water to her when she comes into a church, and in all points acts like a lover. Some are not contented with one, but must have four or five, who are employed in different offices, her wit and beauty being rated in proportion to the number of those votaries. They all pass under the denomination of Platonic lovers, and one would think, the husband had nothing to fear from these familiarities; however, this custom seems to be on the decline, since one of the Spinola family made it a part of the marriage-contract, that his wife should have no Cizibeo, or Platonic gallant. The dress of the married ladies after the first year is black silk or velvet; for they have not the liberty of choosing their own clothes after the expiration of that term. While the ladies are young, they are generally shut up in a nunnery.

GENTIAN, *Gentiana*, in botany, a genus of plants.

The root of which is large, remarkably tough, and of a firm texture. It is brought to us from Germany, where it is in many places cultivated as liquorice is among us; and is to be chosen fresh, tough, of a middle size, free from the small fibres, and well dried; though if it be scorched, it is to be rejected.

The root is one of the best stomachic bitters that the materia medica affords: it procures an appetite, and greatly assists digestion. But if we give credit to some authors, this is one of the least of its virtues; they have recommended it as a febrifuge and an alexipharmic, and as the most certain remedy for the bite of a mad dog. On this occasion it is not only recommended internally, but externally, a cataplasm made of venice-treacle and the powder of this root, being ordered to be applied to the wound. It is also said to be a certain remedy for agues, and one of the best known medicines against the plague.

GENTILE, in matters of religion, a pagan, or worshipper of false gods.

GENUS, among metaphysicians and logicians, denotes a number of beings, which agree in certain general properties, common to them all: so that a genus is nothing else but an abstract idea, expressed by some general name or term.

It is plain, therefore, that by a genus we do not barely signify one particular thing, nor yet a plurality of things; but a sort or kind of things, all agreeing in certain general properties.

Thus animal is said to be a genus in respect of man and brute, as man and brute agree in the common nature and character of animal: so a right-lined figure of four sides, is a genus in respect of a parallelogram, and a trapezium: and so likewise is substance, in respect of substance extended, which is body; and thinking substance, which is mind.

GENUS is also used for a character or manner applicable to every thing of a certain nature or condition: in which sense it serves to make capital divisions in divers sciences, as music, rhetoric, anatomy, and natural history.

GENUS, in music, by the ancients called *genus melodicæ*, is a certain manner of dividing and sub-dividing the principles of melody; that is, the consonant and dissonant intervals into their concinnous parts.

GENUS, in natural history, a subdivision of any class or order of natural beings, whether of the animal, vegetable, or mineral kingdoms, all agreeing in certain common characters.

GEOCENTRIC, in astronomy, is applied to a planet or its orbit, to denote it concentric with the earth, or as having the earth for its center, or the same center with the earth.

GEOCENTRIC Latitude of a Planet is its distance from the ecliptic, as it is seen from the earth, which, even though the planet be in the same point of her orbit, is not constantly the same, but alters according to the position of the earth in respect of the planets.

GEOCENTRIC Place of a Planet, the place wherein it appears to us from the earth, supposing the eye there fixed: or it is a point in the ecliptic to which a planet seen from the earth is referred.

GEOGRAPHICAL MILE, the same with the sea-mile; being one minute, or the sixtieth part of a degree of a great circle on the earth's surface. See *Degree*.

GEO

GEOGRAPHY, the doctrine or knowledge of the terrestrial globe; or the science that teaches and explains the properties of the earth, and the parts thereof which depend upon quantity.

The properties of geography, according to Varenus, are of three kinds, viz. celestial, terrestrial, and human. The celestial properties are such as affect us by reason of the apparent motion of the sun and stars. These are eight in number. 1. The elevation of the pole, or the distance of a place from the equator. 2. The obliquity of the diurnal motion of the stars above the horizon of the place. 3. The time of the longest and shortest day. 4. The climate and zone. 5. Heat, cold, and the seasons of the year; with rain, snow, wind, and other meteors. 6. The rising, appearance, and continuance of the stars above the horizon. 7. The stars that pass through the zenith of a place. 8. The celerity of the motion with which, according to the Copernican hypothesis, every place constantly revolves.

The terrestrial properties are those observed in the face of each country, and are ten in number. 1. The limits and bounds of each country. 2. Its figure. 3. Its magnitude. 4. Its mountains. 5. Its waters, viz. springs, rivers, lakes, and bays. 6. Its woods and deserts. 7. The fruitfulness and barrenness of the country, with its various kinds of fruits. 8. The minerals and fossils. 9. The living creatures there. 10. The longitude and latitude of the place.

The third kind of observations to be made in every country is called human, because they chiefly regard the inhabitants of the place; and these are also ten in number. 1. Their stature, shape, colour, and the length of their lives; their origin, meat, and drink. 2. Their arts, and the profits which arise from them, with the merchandize and wares they barter one with another. 3. Their virtues and vices, learning, capacities, and schools. 4. Their ceremonies at births, marriages, and funerals. 5. The language which the inhabitants use. 6. Their political government. 7. Their religion and church government. 8. Their cities and famous places. 9. Their remarkable histories. 10. Their famous men, artificers, and inventions of the natives.

These are the three kinds of occurrences to be explained in special geography.

In universal geography, the absolute division of the earth, and the constitution

of its parts, are examined; and the celestial phenomena in general are to be applied to their respective countries in special geography.

Geography is very ancient, at least the special part of it; for the ancients scarce went beyond the description of countries. It was a constant custom among the Romans, after they had conquered and subdued any province, to have a map or painted representation thereof, carried in triumph, and exposed to the view of the spectators. Historians relate, that the Roman senate, about an hundred years before Christ, sent geographers into divers parts to make an accurate survey and mensuration of the whole globe, but they scarce ever saw the twentieth part of it.

Before them, Necho, king of Egypt, ordered the Phœnicians to make a survey of the whole coast of Africa, which they accomplished in three years. Darius procured the Ethiopic-sea, and the mouth of the Indus, to be surveyed; and Pliny relates, that Alexander, in his expedition into Asia, took two geographers to measure and describe the roads; and that from their itineraries, the writers of the following ages took many particulars. Indeed this may be observed, that whereas most other arts and sciences are sufferers by war, geography and fortification alone have been improved thereby. Geography, however, must have been exceedingly defective, as a great part of the globe was then unknown, particularly all America, the northern parts of Europe and Asia, with the Terra Australis, and Magellanica; and as they were ignorant of the earth's being capable to be sailed round, and of the torrid zone's being habitable, &c.

The honour of reducing geography to art and system, was reserved for Ptolemy, who, by adding mathematical advantages to the historical method in which it had been treated of before, has described the world in a much more intelligible manner: he has delineated it under more certain rules, and by fixing the bounds of places from longitude and latitude, hath discovered other mistakes, and has left us a method of discovering his own.

The principal writers upon geography, among the ancients, are Ptolemy, Pliny, and Strabo: among the moderns, Joannes de Sacrobosco, Cluverius, Heylin, Ricciolus, Weigelius, de Chales, and, above all, Varenus, with Jurin's additions; to which may be added Leibnecht, Stürmius, Morden, Gordon, Salmon, &c.

GEOMETRICAL, in general, an appellation given to whatever belongs to, or is strictly connected with, geometry. See *Geometry*.

GEOMETRICAL Solution of a Problem, is when it is solved according to the rules of geometry, and by such lines as are truly geometrical, and agreeable to the nature of the problem.

GEOMETRY, originally signified no more than the art of measuring the earth, or any distances or dimensions within it; but at present, it denotes the science of magnitude in general; comprehending the doctrine and relations of whatever is susceptible of augmentation or diminution, considered in that light.

Hence, to geometry may be referred the consideration not only of lines, surfaces, and solids; but also of time, velocity, number, weight, &c.

Plato thought the word geometry an improper name for this science, and accordingly substituted in its place the more extensive one of mensuration; and, after him, others gave it the title of pantometry, as demonstrating not only the quantities of all manner of magnitudes, but also their qualities, ratios, positions, transformations, relations, &c. And Proclus calls it the knowledge of magnitudes and figures, and their limitations; also of their motions, and affections of every kind.

Origin and Progress of GEOMETRY. This science had its rise among the Egyptians, who were in a manner compelled to invent it, to remedy the confusion which generally happened in their lands, from the inundations of the river Nile, which carried away all boundaries, and effaced all the limits of their possessions. Thus this invention, which at first consisted only in measuring the lands, that every person might have what belonged to him, was called geometry, or the art of measuring land; and it is probable, that the draughts and schemes, which they were annually compelled to make, helped them to discover many excellent properties of these figures; which speculations continued to be gradually improved, and are so to this day.

From Egypt geometry passed into Greece, where it continued to receive new improvements in the hands of Thales, Pythagoras, Archimedes, Euclid, &c. The elements of geometry, written by this last in fifteen books, are a most convincing proof to what perfection this science was carried among the ancients. However, it

must be acknowledged, that it fell short of modern geometry, the bounds of which, what by the invention of fluxions, and the discovery of the almost infinite orders of curves, are greatly enlarged.

Division of GEOMETRY. This science is usually distinguished into elementary, and higher or sublime geometry.

The first, or elementary geometry, treats of the properties of right lines, and of the circle, together with the figures and solids formed by them. The doctrine of lines comes first, then that of surfaces, and lastly that of solids.

The higher geometry comprehends the doctrine of the Conic sections, and numerous orders of curves.

Geometry is again divided into speculative and practical; the former treating of the properties of lines and figures, as Euclid's Elements, Apollonius's Conic Sections, &c. and the latter shewing how to apply these speculations to the use of mensuration, navigation, surveying, taking heights and distances, gauging, gunnery, &c.

Usefulness of GEOMETRY. The usefulness of this science extends to almost every art and science. It is by the help of it that astronomers turn their observations to advantage, regulate the duration of times, seasons, years, cycles, and epochas; and measure the distance, motions, and magnitude of the heavenly bodies. It is by it that geographers determine the figure and magnitude of the whole earth; and delineate the extent and bearings of kingdoms, provinces, harbours, &c. It is from this science too, that architects derive their just measures, in the construction of public edifices as well as of private houses.

It is by the assistance of geometry that engineers conduct all their works, take the situation and plans of towns, the distances of places, and the measure of such things as are only accessible to the sight. It is not only an introduction to fortification, but highly necessary to most mechanics, especially carpenters, joiners, mathematical-instrument-makers, and all who profess designing.

On geometry likewise depends the theory of music, optics, perspective, drawing, mechanics, hydraulics, pneumatics, &c.

GEORGE, or *Knights of St. GEORGE*, has been the denomination of several military orders, whereof that of the garter is one of the most illustrious. See *Garter*.

GEORGE I. king of Great Britain,

was created duke of Cambridge, October 5, 1706, and succeeded queen Anne, who dying on the first of August, 1714, the council gave orders that the elector of Hanover should be proclaimed king; and he was crowned on the 11th of October following; his majesty having first changed the ministry, and restored the duke of Marlborough to his former posts. It soon appeared that James, son of king James II. had a numerous party in Great Britain; for the earl of Mar, with several other noblemen and gentlemen, assembled at the Brae of Mar, and having on the 16th of September proclaimed the pretender king, their numbers soon encreased to twenty thousand men. The earl of Derwentwater and Mr. Forster assembled their friends in Northumberland, and Mr. Forster proclaimed the pretender king at Warkworth. Meanwhile, the lord viscount Kenmure headed some noblemen and others in the west of Scotland, and declared the pretender king at Moffat, in Annandale, and soon after joined Forster on the borders of Scotland. At length Mackintosh, Kenmure, and Forster marched to Preston in Lancashire; but the generals Wills and Carpenter, with nine regiments of dragoons, and one of foot, surrounded the place; when Forster submitting, delivered up all his men prisoners at discretion. Meanwhile the pretender landed at Peterhead, and being conducted to Fetterose, was there proclaimed king. But the duke of Argyle having, in January 1716, obliged the rebels to abandon Perth, they retired to Montrose, and the pretender privately escaped to France; upon which, Gordon, their general, conducted them into the mountains, where they dispersed. Of the many who received sentence of death on account of this rebellion, none were executed but the lords Derwentwater and Kenmure, with a few of the lower rank. King George I. was thus settled on his throne, which he endeavoured to secure by the mildness of his government, and his strict adherence to the laws. In 1718 war was declared against Spain, when sir George Byng being sent with twenty-one ships into the Mediterranean, defeated the Spanish fleet, on the 31st of July, and not only took ten men of war, and burnt four, but made the admiral and rear-admiral prisoners; and afterwards destroyed seven Spanish men of war, and a great quantity of naval stores on the coasts of Sicily and Biscay. In return, a Spanish squadron with ten

thousand regular troops was sent in December, under the duke of Ormond, to invade England; but were dispersed by a violent storm. However, the marquiss of Tullibardine, and the earls of Marischal and Seaforth landed in Scotland, and were joined by two thousand Highlanders; but were entirely defeated on the 10th of June, by general Wightman, with one thousand two hundred men. The lord Cobham then made a descent on the coast of Spain, and took Vigo. But in 1727, his majesty going to visit his German dominions, was taken ill in his coach on the road to Hanover, and died two days after, at his brother's palace at Osnaburg, on the 11th of June, in the sixty-eighth year of his age, and the thirteenth of his reign, and was interred at Hanover. He was succeeded by his only son George II.

GEORGE II. king of Great Britain. As George I. died abroad the 11th of June, the court did not hear of his death till the 14th of June, 1727, and the next morning George II. was proclaimed king, and on the 11th of October his majesty, with Caroline his queen, were crowned at Westminster. The nation was then at war with the Spaniards; but in 1729 a peace was concluded at Seville, between Great Britain, France, and Spain. This state of tranquillity lasted till 1739, when war was again declared against Spain, on the 29th of October; and on the 22d of November, 1740, admiral Vernon, with only six ships, took Porto Bello: but being sent the next year to attack Carthage, though he destroyed six Spanish ships of the line, and seven galleons, the attempt miscarried, through a disagreement which arose between the admiral and the general. His majesty powerfully supported the queen of Hungary's succession to the hereditary dominions of her late father the emperor Charles VI. and at length both England and France, under the name of auxiliaries to the contending powers, became principals in the war: when George II. not only furnished sixteen thousand British troops, but headed the allied army in person, accompanied by the duke of Cumberland, and a battle was fought at Dettingen, on the 16th of July, 1743, in which his Britannic majesty had the honour of the field. The duke of Cumberland was wounded in the action. In 1744 war was declared against France, and the next year the people of New England, assisted by ten men of war under commodore Warren, took Cape Breton, with

with the loss of only an hundred men : but it was afterwards changed for Madrafs. On the 27th of July, 1745, the young pretender came to Scotland, in a small frigate, and soon obtaining a considerable force, had his father proclaimed king, while he assumed the title of prince-regent. He took several places, gained some advantages over the king's forces, and advanced into the heart of England ; but at length the duke of Cumberland marching against him, he made a precipitate retreat, and the duke coming to an engagement near Culloden-house, obtained a complete victory, in which about one thousand four hundred of the rebels were killed, wounded, and taken prisoners, though the royal army had only sixty men killed, and two hundred and eighty wounded. Among the prisoners were the earl of Kilmarnock, lord Lovat, lord Balmerino, and Mr. Radcliffe, brother to the earl of Derwentwater, who were afterwards beheaded on Tower-hill. At length a general peace was proclaimed in London, on the 2d of February, 1749. His majesty again declared war against France on the 17th of May, 1756, and sent admiral Byng with a strong fleet to the relief of Minorca ; but he neglected to fulfil his instructions, the place was lost, and he was tried and shot at Portsmouth. During these transactions Mr. Clive, one of the East-India company's clerks, distinguished himself in the East Indies, obtaining the rank of colonel, and had such amazing success, that all the towns and factories of the French on the coast of Coromandel, except Pondicherry, were in a few years taken by the English, and Pondicherry was afterwards taken by general Coote. On the other hand, in 1758, the duke of Marlborough landing near St. Maloes in France, burnt many ships, with a great quantity of naval stores. Lieutenant-general Bligh and captain How took Cherburgh, and demolished its fortifications. Soon after captain Marth took Senegal, and commodore Keppel the island of Gorree, on the coast of Africa. On the 26th of July, Cape Breton was retaken by general Amherst and admiral Boscawen. Soon after fort Frontenac surrendered to lieutenant-general Bradstreet, and fort du Quesne to general Forbes. On the first of May, 1759, the island of Guadeloupe surrendered to the English ; in the same month Marigalante, Santos, and Desseada became subject to Great Britain : the same year general Wolfe, assisted by the fleet, took

Quebec ; and on the 8th of September, Montreal and all Canada submitted to the English. After these glorious conquests, his majesty died, greatly lamented, at Kensington, the 26th of October, in the seventy-seventh year of his age, and the thirty-fourth of his reign, and the next day his grandson George III. was proclaimed king.

GEORGE THE THIRD, king of Great Britain, &c. was born June 4, 1738, proclaimed October 26, 1760, married Charlotte of Mecklenburgh, September 7, 1761, and was crowned September 22, 1761.

Cross of St. GEORGE, a red one in a field argent, which makes part of the British standard.

* GEORGE (Fort. St.) otherwise called Madrafs ; a town of Asia, on the coast of Coromandel in India, on this side the Ganges. It is a colony belonging to the English East-India company, seated in a very incommodious place. It fronts the sea, which continually rolls impetuously on its shore, and its foundation is in a sandy soil, with a salt-water river on the back of it, which hinders the rivulets of fresh water from coming near the town ; so that they have no water fit to drink within a mile. The sea often threatens destruction on one side, and the river, in the rainy season, inundations on the other. The sun from April to September is so intolerably hot, that if it were not for the sea breezes, which refresh it a little, there would be no living there. The soil about the town is so dry and sandy, that it bears no corn, though by the help of manure there are fruits and garden stuff for the use of the factory. The town is divided into two parts, that where the Europeans dwell is called the White Town, and is walled quite round, having several bastions and bulwarks to defend its walls, which can only be attacked at the ends, the sea and river fortifying the sides. It is about four hundred paces long, and one hundred and fifty broad, and is divided into pretty regular streets, and the fort stands near the center. There are two churches, one for the English, and the other for the Romish service, both which are superintended by the governor. There is likewise a very good hospital, and neat stables for the company's horses. But the old college, where a great many of the gentlemen factors are obliged to lodge, is not very elegant. They have a town-hall, and underneath it are prisons for debtors. They

G E R

are a corporation, and have a mayor and aldermen, which are chosen by the free-burghers of the town, but now they are put in by the governor and his council. They carry on the formality of a court, with maces and officers, but money will turn the scale of justice either way; for the governor has great influence in the determination of causes. They could not formerly punish with death, unless in cases of piracy; but there are instances of some former governors having stretched their power to a very shameful degree. The common way of treating criminals is by whipping and starving, and by a late order they can now punish capitally.

GEORGIC, a poetical composition upon the subject of husbandry, containing rules therein, put into a pleasing dress, and set off with all the beauties and embellishments of poetry.

The style proper to a georgic must be worked up with a great deal of thought and vigour, that the words may be lively, and every thing the poet describes may immediately rise up to the reader's view. Hesiod and Virgil are the two greatest masters in this kind of poetry. In Virgil's Georgics are contained the most useful rules for husbandry in all its branches. Virgil has infinitely exceeded Hesiod in this sort of writing: he began his Georgics at the persuasion of Mæcenas, and was near seven years about them; they are, with respect to the diction, the most finished of all his works, and even of all the poems that ever were composed in Latin.

GERANIUM, crane's bill, in botany, a genus of plants, which stands recommended by authors, as one of the greatest vulneraries and astringents of the vegetable world, particularly for stopping hæmorrhages, excess of the menses, &c.

GERM, among gardeners, the same with bud.

GERMAN, in genealogy, denotes entire or whole: thus, a brother-german is one both by the father's and mother's side; and cousins-german are the children of brothers or sisters.

GERMAN, or **GERMANIC**, any thing belonging to Germany; as the German empire, German flute, German body, &c.

GERMANDER, in botany, the English name of the teucrium of Linnæus.

Water-GERMANDER, a plant called by botanists scordium.

* **GERMANY**, a large country in the

G E R

middle of Europe, having Hungary and Poland on the east; the Baltic Sea and Denmark on the north; the Low Countries, France, and Switzerland on the west; and the Alps, Italy, and part of Switzerland on the south. It lies in between five and nineteen degrees of east longitude, and forty-six and fifty-five degrees of latitude, being about six hundred and forty miles in length, and five hundred and fifty in breadth. The air is salubrious and temperate, rather cold than hot, especially along the sea-shore. The soil is very fit for corn and pasture, and the parts near the Rhine produce plenty of wine. Besides these there are oil, sheep, black cattle, horses, flax, hemp, and abundance of good timber; nor must we forget their bacon-hams, beer, and mum; nor yet their iron, copper, lead, silver, pit-coal, vitriol, quicksilver, nitre, oker, and sulphur. They have the best medicinal springs and baths of Europe, as at Pyrmont, Baden, Aix-la-Chapelle, and other places. They have also deer, fish, and fowls, and their orchards are full of the best fruits. The people are excellent mechanics and chemists; and the invention of printing and gunpowder in these parts of the world is ascribed to them. They have brought clocks, watches, fire-arms, and swords, to great perfection; and the making of tin plates is almost wholly engrossed by them. They are excellent engineers. Their foreign trade is carried on by the rivers Rhine, Elbe, Oder, Weser, and the Baltic Sea; particularly from the ports of Hamburg, Lübeck, Stetin, &c. And by land with France, Holland, and Switzerland. They export a good deal of linen; and what we call Dutch toys come from thence. Provisions and labour are cheap, which enable them to employ themselves in some thing, which otherwise would not turn to an account. The forests are very numerous, and contain stags, fallow deer, roe-bucks, wild boars, buffaloes, and other sorts of game. The Black Forest is the largest in Europe.

Germany is an empire, which by the French is called *Allemagne*, from the *Allemands*, a people who in the third century inhabited that part of the country, which is now called Upper Germany; and the Lower was possessed by the *Teutons*, a people well known long before the birth of Jesus Christ. The Franks, a people of Lower Germany, made themselves masters of the Low Countries and Gaul,

G E R

Gaul, which from them is called France, in about the fifth century. In the two following centuries they conquered the greatest part of Germany. Charlemagne, in the eighth century, brought them under subjection, having subdued the Saxons after a war of thirty years. Thus Germany became subject to this prince, and Lewis the Debonair. This last divided some part of his dominions among his three sons, Lothair, Lewis, and Charles. Lewis, the second of that name, governed Germany, under the title of a kingdom, and it continued in his family from the year 840, to 911; when Lewis III. dying without children, the empire of Germany became elective, and has continued so ever since.

The Germans are robust, well made, ingenious, sincere, war-like, lovers of good cheer and strong liquors. The nobility are never debased by marrying into low families, which perhaps may in some measure be owing to interest, because many abbeyes and great benefices oblige them to prove their nobility; for the archbishops, bishops, and abbeyes are elective, and some of the princes possess several of these at once.

Germany is divided into nine circles, viz. Austria, Bavaria, Suabia, Upper Saxony, Lower Saxony, Westphalia, Franconia, the Upper Rhine, and the Lower Rhine.

The emperor of Germany is elected at Frankfort on the Main, and is crowned in the same city, or at Ratibon. He was elected formerly by all the princes and prelates of Germany; but since the golden bull of Charles IV. in 1336, it is performed by the electors only, whose number was then seven, but now they are nine, viz. three ecclesiastics, and six seculars. At the peace of Munster, in 1648, the eighth electorate was created in favour of the count Palatine of the Rhine, who had been deprived of his dominions, and his electorate given to the duke of Bavaria. The ninth has been created since. Thus the nine electors are, the archbishop of Mentz, that of Cologne, and that of Treves; the king of Bohemia, the count Palatine, the duke of Saxony, the marquis of Brandenburg, the duke of Bavaria, and the elector of Hanover. The first of the ecclesiastical electors is chancellor of Germany, and director of the archives of the empire; the second, chancellor of Italy; and the third is chancellor of the Gauls. These

G I B

titles show the powers which the emperors formerly possessed. The duke of Bavaria is grand master of the empire, and carries the golden apple at the ceremony of the coronation. The elector of Saxony is grand esquire, and carries the sword. That of Brandenburg has the title of great chamberlain, and carries the sceptre. The elector Palatine is grand treasurer. The title of palatine was formerly given to all those who had any office in the palace of the prince.

When the empire is vacant, and there is no king of the Romans, the elector of Saxony, and the count Palatine, are vicars of the empire; but the duke of Bavaria disputes this post with him since the Palatine has been restored to his electorate. The emperor Leopold created the ninth electorate in favour of Ernest-Augustus duke of Hanover.

The emperor has no settled income, nor any city belonging to him as emperor, for which reason the Germans should always choose a prince who is powerful enough to support his dignity. He assumes the title of Cæsar, always august, and of his sacred majesty.

GERMINATION, the first sprouting of the seeds of plants.

GERUND, in grammar, a verbal noun of the neuter gender, partaking of the nature of a participle, declinable only in the singular number, through all the cases, except the vocative; as, nom. *amandum*, gen. *amandi*, dat. *amando*, accus. *amandum*, abl. *amando*. The gerunds are derived from active, neuter, and deponent verbs; and, for the most part, they follow their signification; as, *docendum*, from *doceo*; *currendo*, from *curro*; *loquendum*, from *loquor*.

GESTATION, among physicians, the same with pregnancy.

GESTURE, in rhetoric, the proper action of the hands and face. It is a kind of natural language, that supplies the use of speech in persons born dumb.

GEUM, *Avens*, in botany, a genus of plants.

GIBBOUS, in astronomy, a term used in reference to the enlightened parts of the moon, whilst she is moving from the first quarter to the full, and from the full to the last quarter; for all that time the dark part appears horned, or falcated; and the light one hunched out, convex, or gibbous.

* **GIBRALTAR**, a town of Andalusia in Spain. It had its name from a Moor, named Tarik, who settled here in spite of the

the Goths, and from him it was called Gebel-Tarik, or the Mountain of Tarik; for Gebel, in the Moorish language, signifies a mountain. This is properly a rock, which is very steep and craggy; but it is flat on the top, from whence there is an extensive view of the Mediterranean Sea, Barbary, Fez, and Morocco, in Africa, and the kingdoms of Seville and Granada, in Spain. The town is at the foot of the mountain to the west, and was so well fortified while in the hands of the Spaniards, that it was supposed to be impregnable, till it was taken by sir George Rook, in 1704, and it has remained in the hands of the English ever since. They attempted to take it three times since, but without effect. The first time four hundred French and Spaniards crept up the rock in the night, but were driven headlong down the next morning. In 1727, they endeavoured to blow up the rock, but found it impracticable. The garrison have all their provisions from England and the Barbary shore. It is made a free port, but cannot obtain any trade, and it is now freed from a military government which was very oppressive. It is twenty-four miles north of Ceuta, forty south-east of Cadiz, and eighty-four south of Seville. Lat. 36 deg. N. Long. 4 deg. 15 min. W.

GIFT, in law, a conveyance, by which either lands or goods are passed: it is of larger extent than a grant, being applied to things moveable and immoveable.

GIGG, or **JIG**, in music, a brisk and lively air; or an airy kind of dance, to a sprightly measure.

GILDING, the art of spreading or covering a thing with gold, either in leaf or liquid.

We have this advantage over the ancients, in the manner of using and applying the gold, that the secret of painting in oil, lately discovered, furnishes us with means of gilding works, capable of enduring all the violences of time and weather, which theirs could not.

There are several methods of gilding in use among us, as gilding in water, gilding in oil, gilding by fire, &c.

The Method of Water-GILDING.—Water-gilding requires more preparation than oil-gilding, and is chiefly on wooden works, and those made of stucco; and these too must be sheltered from the weather. A size is used for this way of gilding made of shreds, &c. of parchment or gloves boiled in water to the consistence of

a jelly. If the thing to be gilt be of wood, it is first washed with this size, boiling hot, and then set to dry; and afterwards with white paint mixed up with the same size. Some use Spanish white for this purpose, and others plaster of Paris, well beaten and sifted. This sized paint must be laid on with a stiff brush; which is to be repeated seldomer or oftener, according to the nature of the work, as ten or twelve times in flat or smooth works, but seven or eight will be sufficient in pieces of sculpture. In the former case, they are applied by drawing the brush over the work; in the latter, by dabbing it. When the whole is dry, they moisten it with fair water, and rub it over with several pieces of coarse linen, if it be on the flat; if not, they beat or switch it with several slips of the same linen, tied to a little stick, to make it follow and enter all the cavities and depressures thereof.

Having thus finished the white, the next thing to be done is to colour it with yellow ochre; but if it be a piece of sculpture in relievo, they first touch it up, and repair the several parts, which may have happened to have been disfigured by the small iron instruments, as gouges, chissels, &c. The ochre used for this purpose must be well ground and sifted, and mixed up with the size before mentioned. This colour is to be laid on hot; and in works of sculpture, supplies the place of gold, which sometimes cannot be carried into all the depressures and cavities of the foliages and other ornaments. A lay is also applied over this yellow, which serves for the ground on which the gold is to be laid: this lay is usually composed of Armenian bole, blood-stone, black-lead, and a little fat; to which some add soap, and oil of olives; others, burnt bread, bistre, antimony, glass of tin, butter, and sugar-candy. These ingredients being all ground down together with hot size, three lays of this composition is applied upon the yellow, the one after the other has been dried; being cautious not to put any into the cavity of the work to hide the yellow.

The brush, used for this purpose, must be a soft one; and when the matter is become very dry, they go over it again with a stronger brush, to rub it down, and take off the small grains that stick out, in order to facilitate the burnishing of the gold.

To be prepared for gilding, you must have three sorts of pencils: one to wet, another to touch up and amend, and a third to flatten; also a gilding cushion, for spreading the leaves of gold on when taken out of the book; a knife to cut them, and a squirrel's tail fitted with a handle; or else a piece of fine soft stuff on a stick, to take them up directly and apply them. You are first to begin with wetting your pencils; by which the last lay laid on with water is moistened, that it may the better receive and retain the gold. Then you are to lay the leaves of gold on the cushion, and if whole, you must take them up with the squirrel's tail, but if in pieces, with the other instrument or the knife wherewith they are cut, and lay and spread them gently on the parts of the work you had moistened before. If the leaves, as they frequently do, happen to crack or break in laying on, these breaches must be made up with small bits of leaf, taken up upon the repairing pencil, and the whole work is to be smoothed either with the same pencil, or another something larger; the gold being pressed into the dents, into which it could not be so easily carried by the squirrel's tail.

The work having been thus far gilded, must be set to dry, in order to be burnished or flatted. See the article *Burnishing*.

The last operation is the applying the vermeil in all the little lines and cavities; and to stop and amend any little faults with shell-gold. The composition called vermeil is made of gum guttae, vermilion, and a little of some ruddy-brown, ground together with Venetian varnish and oil of turpentine. Some gilders, instead of this, make shift with fine locca, or dragon's blood, with gum-water.

Sometimes instead of burnishing the gold, they burnish the ground or composition laid on the last before it, and only afterwards wash the part over with the size. This method is chiefly practised for the hands, face, and other nudities in relieve; which, by this means, do not appear so very brilliant as the parts burnished, tho' much more so than the parts perfectly flat.

To gild a piece of work, and yet preserve white grounds, they apply a lay of Spanish white, mixed with a weak fish-glue, on all the parts of the ground, whereon the yellow or the last lay might run.

The Method of GILDING in Oil.—This operation requires much less apparatus than that before mentioned. The basis or mat-

ter whereon the gold is laid, in this method, is the remains of colours found settled to the bottom of the pots in which painters wash their pencils. This matter, which is very viscid or sticky, is first ground, and then passed through a linen cloth, and thus laid on the matter to be gilt, after it is washed once or twice over with size; and if it be wood, with some white paint.

When this is almost dry, yet is still unctuous enough to catch and retain the gold, the leaf-gold is laid on, either whole, if the work be large, or cut to-pieces, if smaller: the leaves of gold are taken up and laid on with a piece of fine, soft, well-carded cotton; or sometimes by a palat for the purpose, or sometimes with the knife with which the leaves were cut, according to the parts of the work that are to be gilded, or the breadth of the gold that is to be laid on. As the gold is laid on, they pass over it a coarse stiff pencil or brush, to make it stick, and as it were incorporate with the ground; and after this they mend any cracks that may have happened in it, either with the same pencil or one that is smaller, as has been shewn before in water-gilding.

This kind of gilding is chiefly used for domes and roofs of churches, courts, banquetting-houses, &c. and for figures of plaister of Paris, lead, &c.

The Method of GILDING with liquid Gold.—This is performed by gold reduced to a calx amalgamated with mercury, in the proportion of about an ounce of mercury to a dram of gold. To perform this, they heat a crucible red-hot, and then put the gold and mercury into it, stirring them gently about till the gold be found melted and incorporated into a mass with the mercury. When this is done, they cast them into water, to wash and purify them; and out of that into other waters, where the amalgama, which is almost as liquid as if there were nothing but quick-silver in it, may be preserved a long time for use.

Before they proceed to lay this amalgamated gold on the metal, they first render the metal rough, by washing it over with aqua-fortis, or aqua-secunda; and afterwards rinse the metal in fair water, and scour it a little with fine sand, and then it is ready for the gold.

They next cover over the metal with the mixture of gold and mercury, taking it up with a slip of copper, or a brush made of brass wire, spreading it as even as possible, to do which they wet the brush from time to time in fair water. Then they set the metal

to the fire, upon a grate or in a sort of cage, under which stands a pan of coals; and in proportion as the mercury, evaporating and flying off, discovers the places where gold is wanting, they take care to supply them by adding new parcels of amalgama.

Then the work is rubbed over with the wire brush, dipped in beer or vinegar, which leaves it in a condition to be brought to a colour, which is the last part of the process, and which the gilders keep to themselves as a mighty secret.

The Method of GILDING by Fire on Metal.—To prepare the metal, they scratch it well, or rake it; then polish it with a polisher, and afterwards set it to the fire to blue, i. e. to heat till it appear of a blue colour. When this has been done, they clap on the first lay of leaf-gold, rubbing it lightly down with a polisher; and expose it thus to a gentle fire. They usually give it but three such lays, or four at the most, each lay consisting of a single leaf for common works, and of two for extraordinary ones: after each lay, it is set afresh to the fire: and after the last lay, the gold is in condition to be burnished.

To gild Paper.—Grind bole-armoniac with rain-water, and give one laying of it; when it is dry, take glair of eggs, and add to it a little sugar-candy and gum-water, which lay over the former, and upon this when it is dry enough, lay leaf-silver or leaf-gold.

To gild the Leaves of Books. Take bole-armoniac, eight penny-weights; sugar-candy, two penny-weights; mix and grind them with glair of eggs; then on a bound book (while it is in the press, after it hath been smeared with glair of eggs, and is dried) smear the said composition, let it dry, then rub it well and polish it; then with fair water wet the edges of the book, and suddenly lay on the gold, press it down gently with cotton, let it dry, and then polish it with a tooth.

GILDING on Leather. This operation is performed in the same manner as that of gilding paper. But when the leather is intended to be decorated with flowers, or other devices, the figures are either drawn or printed on the leather, with the common size, and the designs covered with leaf-gold; and after the superfluous gold is brushed off, it is burnished.

GILL, a measure of capacity, containing a quarter of a pint.

GILL, a name for ground-ivy, which, being infused in ale, makes what is known by the name of gill-ale; a sort of medi-

cated ale, said to be absterfive and vulnerary.

GIN, or *GENEVA*, among distillers. See *Geneva*.

GIN, in mechanics, a machine for raising great weights, fitted with a windlass and winches at each end, where eight or nine men heave, and round which a rope is reeved, that goes over a pulley at the top; and the whole supported by three feet, forming a triangle.

GINGER, *Zinziber*, in botany. See *Zinziber*.

GINGER-BREAD, a richer kind of bread, the flavour and taste whereof are heightened and improved with spices, and particularly with ginger, whence the name.

The preparation of ginger-bread is as follows: grate two-penny white loaves into two pounds of almonds well blanched and pounded; then add two ounces of ginger, finely scraped, liquorice, and anise in powder, of each half an ounce; add to these five or six spoonfuls of rosemary-water; and knead all into a paste, with a pound of sugar; mould it, and roll it thin, then print it, and dry it in a stove.

Others make it of treacle, citron, lemon, and orange peel, with candied ginger, coriander and carraway-seeds, mixed up with as much flower as will make it into a paste.

GINGIVÆ, the gums, in anatomy, a hard sort of flesh investing the alveoli, or sockets of the teeth. The gums consist of the common membrane of the mouth, and the periosteum of the jaws, to which they adhere very closely and firmly. They are furnished with a vast number of blood-vessels, whence their florid red colour; and they serve for the covering of the jaws, and the keeping the teeth fast in their sockets.

GINGLYMUS, that juncture of the bones wherein they mutually receive and are received by one another, as is the case of the articulation of the humerus and cubitus.

GINSENG, in botany, a famous plant greatly esteemed in China.

The Chinese value the ginseng root so highly, that it sells with them for three times its weight in silver. They, as well as the Asiatics in general, think the ginseng almost an universal medicine: they have recourse to it in all diseases, as the last remedy, and readily give themselves over when it will not cure them; but the virtues most generally ascribed to it, are those of a restorative, a provocative, and a cordial. It is famous in the east for giving

ing strength to those who have disabled themselves by the too free use of women : there they also recommend it greatly in the small-pox, fevers of all kinds, disorders of the stomach and bowels, and tell us that diarrhoeas and dysenteries are cured by it : but they caution people not to give it in too large doses to persons of a florid sanguine constitution, on whatever occasion it may be necessary to them. The European physicians esteem it a good medicine in convulsions, vertigoes, and all nervous complaints, and recommend it as one of the best restoratives known.

Its dose is from ten grains to twenty, in powder ; and from one dram to two to the pint, in infusions.

GIRANDOLE, a kind of branched candlestick.

GIRDERS, in architecture, some of the largest pieces of timber in a floor.

Their ends are usually fastened into summers and breast-summers, and joists are framed in at one end to the girders.

GIRONNE, or **GIRONNY**, in heraldry, a coat of arms divided in girones, or triangular figures, meeting in the center of the shield, and alternately colour and metal.

GIRT, in the mensuration of timber, the circumference of a tree.

GIRT, in the sea language, the situation of a ship riding at anchor with two cables, which are drawn so extremely tight by mechanical powers, as to prevent the ship from turning or veering round on the change of the wind or tide, one of the cables bearing strongly against her keel.

GLACIS, in building, an easy, insensible slope, or declivity.

GLACIS, in fortification, that mass of earth which serves as a parapet to the covered way, sloping easily towards the campaign, or field.

The glacis, otherwise called esplanade, is about six feet high, and loses itself by an insensible diminution in the space of ten fathoms. See *Esplanade*.

GLADE, in gardening and agriculture, an opening and light passage made through a wood, by lopping off the branches of trees.

GLADIATORS, in antiquity, persons who fought generally in the arena at Rome, for the entertainment of the people.

* **GLAMORGANSHIRE**, a maritime county of South Wales, having Brecknockshire to the north, the Severn sea to the south, Monmouthshire to the east, and Carmarthenshire to the west. It is plentifully stored with fish, flesh, and fowls, has many coal-pits, and sends good butter to Bristol. It is well watered with

rivers, the chief of which are the Tavy, Taff, Ogmore, Rumney, Ewenny, Elay, Nid, Cannon, Avon, Dulith, Cledaugh, and Hohon.

The air is sharp near the mountains, but is mild and temperate near the coast, of the Severn sea. The north part is full of high barren hills, and many woods. The south is more level, rich, and fertile, feeding multitudes of cattle and sheep with excellent grass. It is in length from east to west upwards of forty miles, and in breadth, from south to north about thirty. It has ten hundreds, nine market-towns, and one hundred and eighteen parishes. It had twenty-five castles and three monasteries, which are now mostly demolished. It sends two members to parliament, one for the county and one for Cardiff.

GLAND, in anatomy, a small body, formed by the interweaving of vessels of every kind, covered with a membrane, usually provided with an excretory duct, and destined to separate some particular fluid from the mass of blood, or to perfect the lymph. See *Blood* and *Lymph*.

Some are considerably hard and firm, and others extremely soft and tender : of the latter kind in particular are the glands situated in the articulations of the bones of the several parts of the body.

They differ also very considerably in colour. Some of them are of a pale, whitish, red, or fleshy colour ; others of a strong, deep red ; others yellowish, or brownish, and some evidently blackish.

Their differences in figure are as considerable also as those in colour : some of them are round, others oval, others oblong, and many others of figures as different as well can be from any one of these regular ones.

The Uses of the GLANDS are also as different as their colours and figures : some of them are salival, mucose, and lymphatic ; others are mucilaginous, sebaceous, and waxy ; others lachrymal, pituitary, &c. and from these their several contents or secretions, they are termed lachrymal, &c.

The Situation of the GLANDS is another article in which they differ, and from which many of them have their several names, such are the parotides, maxillares, linguales, thyroide, palatine, labial, jugular, cervical, axillary, inguinal, lumbar, intestinal, mesenteric, renal &c.

And, finally, the size of the glands is a thing in which they differ most obviously and essentially.

GLANDERS, in the manege, a disease in horses, consisting of a thick, slimy, corrupt humour, running from the nostrils, of a different colour, according to the different degrees of malignity, or as the infection has been of a shorter or longer continuance; being white, yellow, green, black, or bloody.

Authors ascribe this disease to various causes: some to infection; others, to a disorder in the lungs; others, to the spleen; some to the liver; and others, to the brain. After it has been of so long a standing, as that the matter is become of a blackish colour, which is usually in its last stage, they suppose it to come from the spine: and hence they call it the mourning of the chine. Kernels and knots are usually found under the caul in this disorder; and as these grow bigger and more inflamed, so the glanders increase more.

For the cure of the glanders Mortimer gives the following receipt.

Take a pint of children's chamber-ley; two ounces of oil of turpentine; half a pint of white vinegar; four ounces of flour of brimstone; half a handful of rice; boil this composition till it comes to a pint, and give it to the horse fasting; and let him fast after it six hours from meat, and twelve from water.

GLANDULAR, or **GLANDULOUS**, among anatomists, something abounding with, or partaking of the nature of, glands.

GLANDS, in anatomy, the anterior extremity of the penis, called by other different names, as the head of the penis, the nut of the penis, and the balanus of the penis.

GLANS, is also used to denote the tip or extremity of the clitoris, from its resemblance both in form and use to that of the penis. The principal difference consists in this, that it is not perforated as is the glans of the penis.

* **GLASGOW**, a city of Scotland, in the shire of Clydesdale, seated on the river Clyde, over which there is a handsome stone bridge of eight arches. It is the chief town in the kingdom except Edinburgh, and carries on a very extensive trade. The four principal streets meet in the center of the city, where there is a tolbooth or exchange lately built. The principal houses are all built of hewn stone, and make a very handsome appearance. The university is only one college, but the best in the kingdom. It was founded in 1453, by James II. The scholars wear red gowns, and lodge in the college, which at Edinburgh they

do not. The linen manufacture is carried on here; but they are particularly remarkable for their baking of sugars. It is forty miles west of Edinburgh. Long. 4. 10. W. Lat. 55. 52. N.

GLASS, a kind of factitious, brittle, and transparent body, produced by the action of fire upon a fixed salt and sand that readily melts.

When the art of making glass was invented is uncertain. Some will have it to have been known before the flood, but without any proof. However, glass could not be unknown to the ancients; for a kiln of bricks can hardly be burnt, or a batch of pottery ware made, but some of the bricks and ware will be at least superficially turned into glass.

Pliny tells us that the discovery was owing to the following accident: Some merchants being driven by stress of weather to the mouth of the river Belus in Syria, were obliged to make a fire on the ground to dress their victuals; and there being a great quantity of the plant kali on the spot, some of the ashes of this plant were accidentally mixed with the sand of the place, which produced a vitrification. This hint the Sidonians improved, and brought it into use.

Venice, for many years, excelled all Europe in the fineness of its glasses; but lately the French and English have excelled the Venetians; so that we are no longer supplied from abroad.

The manufactured glass at present in use may be divided into three general kinds, white transparent glass, coloured glass, and common green or bottle glass. Of the first kind, there is a great variety of sorts, according to the several purposes intended to be served by it, either for making domestic utensils, or lights for inclosed places: and of the second, there is likewise a still greater multiplicity of species, differing in their colour or other properties, according to the occasions for which they are wanted: but of the last, there is no distinguished difference of sort, except what the accidental manner of preparation and management, practised according to the skill or art of particular directors of manufactories, may occasion.

The substances which have been employed in forming the body of glass are sand, by which is only to be understood the white kinds, flints, talc, spar, and several other stony fossils. All these vitrify of themselves too slowly to produce perfect

perfect glass by the degree of heat that can be applied to them when in large masses; which makes them therefore require the addition of those other kinds, whose fluxing power may remedy this defect in them; while they on the other hand, being of low price, and to be procured in unlimited quantities, and giving that hardness, strength, and insolubility, which cannot be had in any glass formed of other substances without them, are yet essential and indispensibly necessary ingredients in all kinds of manufactured glass.

The substances which are used as fluxing ingredients in glass, are red lead, pearl-ashes, nitre, sea salt, borax, arsenic, and wood-ashes containing the calcined earth and lixivate salts as produced by incineration. The presence of some of these bodies is always equally necessary with that of those which form the body in all the compositions of manufactured glass. But the use of them both, with respect to choice and proportion, is greatly varied in different works; even where the same kind of glass is intended to be produced; as the general nature of them has never been hitherto understood by the directors of such works; and they have only implicitly followed the best receipts they could procure, carefully keeping them a secret, when they happened either by communication or their accidental discovery to be possessed of such improvement, as gave them any advantages over their fellow operators.

The substances which have been applied as coloring matter in manufactured glass, are extremely numerous and various, as all the species of metals and semi-metals, with many other mineral and fossil bodies, have been used for the producing some colour or other; and make a large field of speculative and practical knowledge. The art of staining glass, with all the variety of colours in the greatest degree of force and brightness, is not however of so much importance commercially considered, as the knowing how to banish and exclude, with ease and certainty, the colours which of themselves arise in most of the compositions for glass intended to be perfectly transparent and colourless: for this last purpose, nitre and magnesia are the principal substances employed in the manufactories of this country; and extremely well answer the end, though not without enhancing the expence of the glass by the use of the first; and in a small degree injuring its transparency by that of the latter; as may be demonstrated by principles that are un-

questionable in themselves, though wholly unknown to those who are practically concerned in these matters.

From these three kinds of substances duly combined together by commixture and adequate heat, or in some cases from the two first only, all the sorts of manufactured glass at present in use are formed. The general manner of doing which is to reduce those kinds of bodies that are in grosser masses, to powder, and then, all the ingredients being thoroughly well mixed together by grinding, and put into proper pots, to place them in a furnace where the heat is sufficient to bring them to a due state of fusion, in which they are to be continued till the vitrification be completed.

Casting or running of large Looking-GLASS Plates.—The furnace is of a very large dimension, environed with several ovens, or annealing furnaces, called carquasses, besides others for making of frit, and calcining old pieces of glass. This furnace, before it is fit to run glass, costs three thousand five hundred pounds. It seldom lasts above three years, and even in that time it must be refitted every six months. It takes six months to rebuild it; and three months to refit it. The melting pots are as big as large hogsheads, and contain about 2000 weight of metal. If one of them bursts in the furnace, the loss of the matter and time amounts to 250l. The heat of this furnace is so intense, that a bar of iron laid at the mouth thereof becomes red hot in less than half a minute.

Grinding and polishing of plate GLASS. Glass is made transparent by fire, but it receives its lustre by the skill and labour of the grinder and polisher, the former of whom takes it rough out of the hands of the maker.

When the grinder has done his part, who finds it very difficult to bring the glass to an exact planeness, it is turned over to the care of the polisher, who with the fine powder of the Tripoli-stone, or emery, brings it to a perfect evenness and lustre.

In the windows of ancient churches, &c. there are to be seen the most beautiful and vivid colours imaginable, which far exceed any of those used by the moderns; not so much because the secret of making those colours is entirely lost, as that the moderns will not go to the charge of them, nor be at the necessary pains, as this sort of painting is not now so much in esteem as formerly. Those beautiful works which were made in the glass-houses were of two kinds.

In some the colour was diffused through the whole substance of the glass. In others, which were the more common, the colour was only on one side, scarce penetrating within the substance above one third of a line; though this was more or less according to the nature of the colour; the yellow being always found to enter the deepest. These last, though not so strong and beautiful as the former, were of more advantage to the workmen, because on the same glass, though already coloured, they could shew other kind of colours where there was occasion to embroider draperies, enrich them with foliages, or represent other ornaments of gold, silver, &c.

In order to this, they made use of emery, grinding or wearing down the surface of the glass, till such time as they were got through the colour to the clear glass. This done, they applied the proper colours on the other side of the glass. By this means, the new colours were hindered from running and mixing with the former, when they exposed the glasses to the fire.

When indeed the ornaments were to appear white, the glass was only bared of its colour with emery, without tinging the place with any colour at all; and this was the manner by which they wrought their lights, and heightenings, or all kinds of colour.

The first thing to be done, in order to paint, or stain glass, in the modern way, is to design, and even colour the whole subject on paper. Then they choose such pieces of glass as are clear, even, and smooth, and proper to receive the several parts, and proceed to distribute the design itself, or papers it is drawn on, into pieces suitable to those of the glass; always taking care that the glasses may join in the contours of the figures, and the folds of the draperies; that the carnations, and other finer parts, may not be impaired by the lead with which the pieces are to be joined together. The distribution being made, they mark all the glasses as well as papers, that they may be known again: which done, applying every part of the design upon the glass intended for it, they copy, or transfer, the design upon this glass with the black colour diluted in gum water, by tracing and following all the lines and strokes as they appear through the glass with the point of a pencil.

When these strokes are well dried, which will happen in about two days, the work being only in black and white, they give a slight wash over with urine, gum

arabic, and a little black; and repeat it several times, according as the shades are desired to be heightened, with this precaution, never to apply a new wash till the former is sufficiently dried.

This done, the lights and risings are given by rubbing off the colour in the respective places with a wooden point or the handle of a pencil.

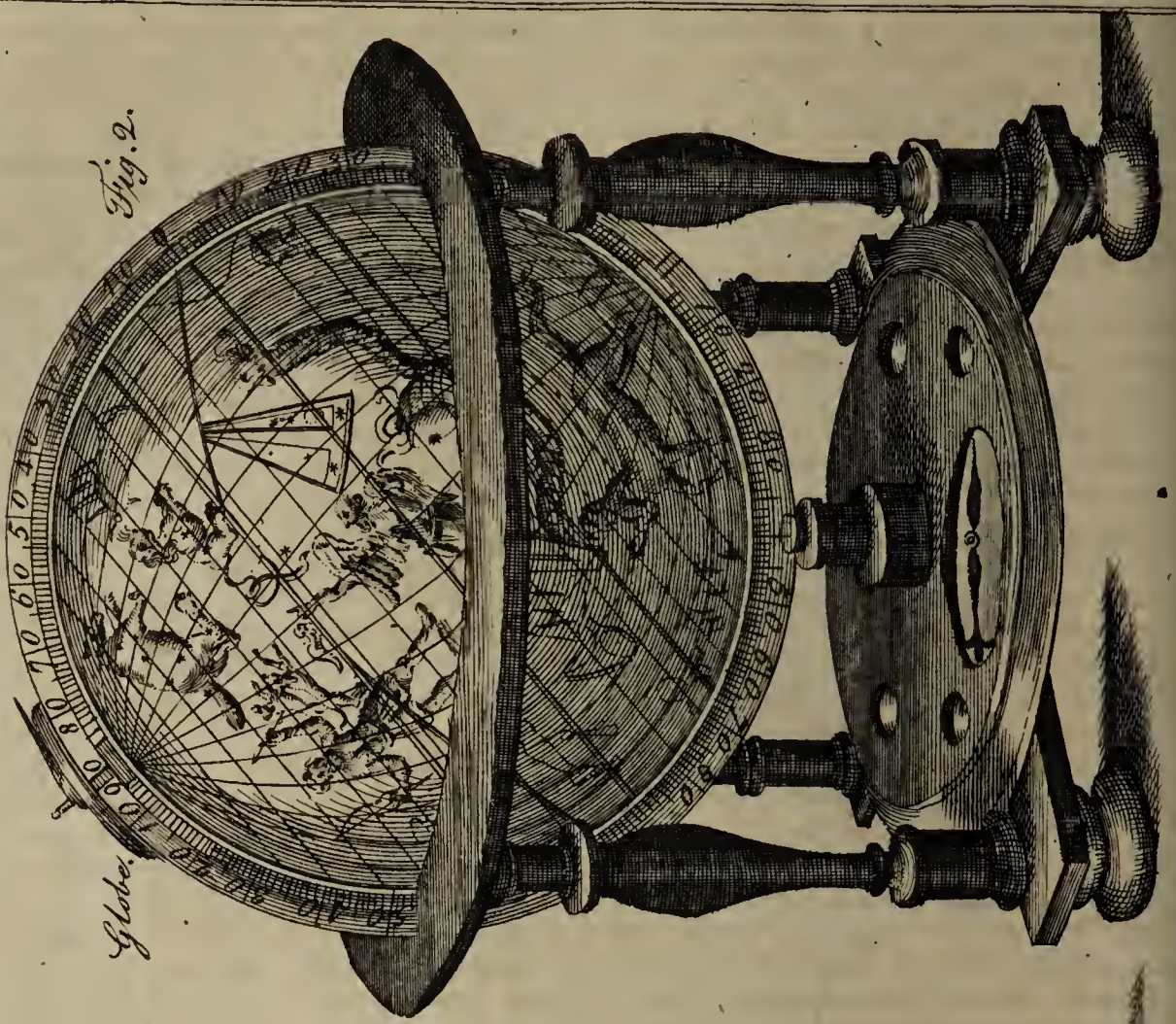
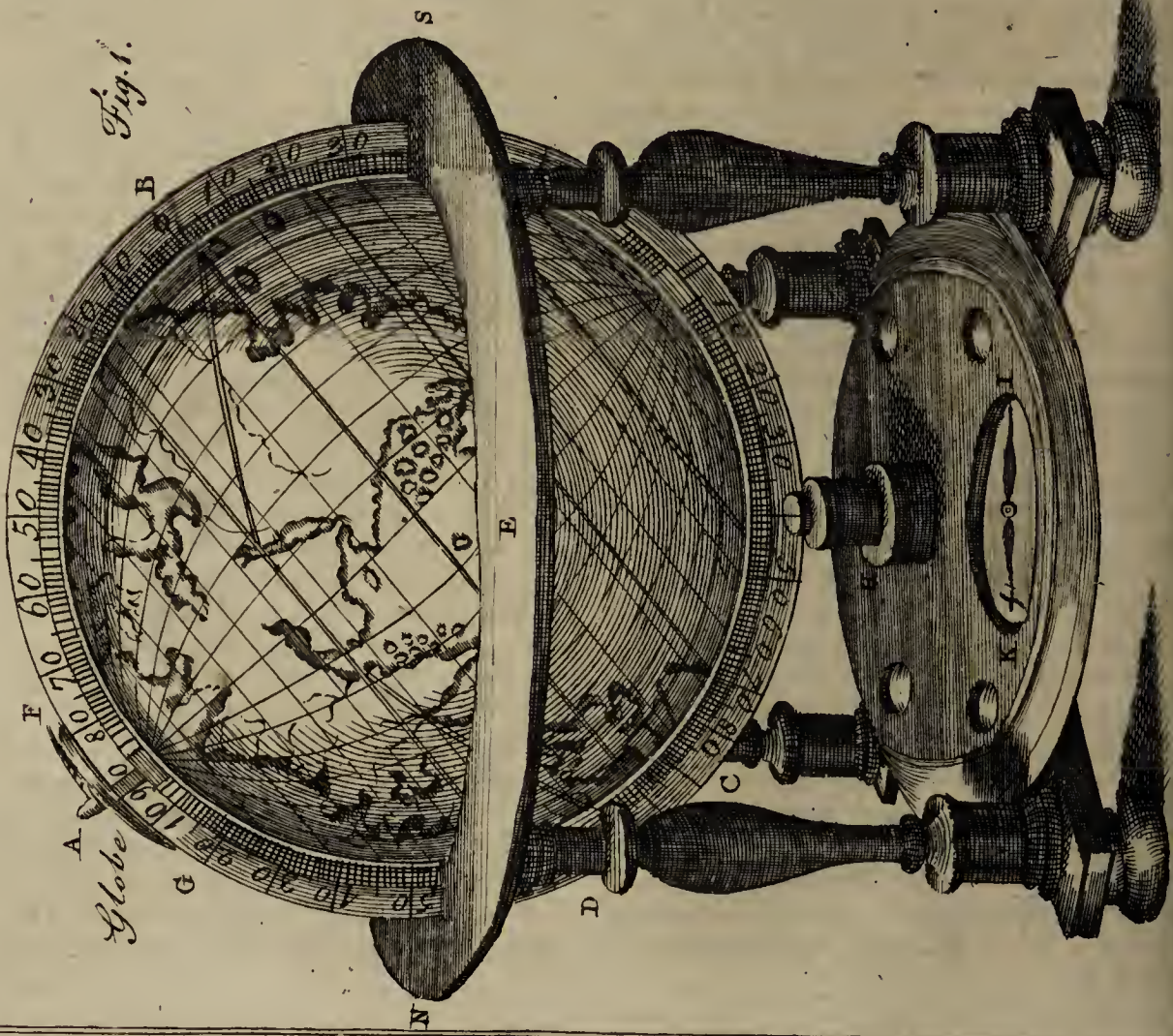
As to the other colours above-mentioned, they are used with gum-water, much as in painting in miniature; taking care to apply them lightly for fear of effacing the out-lines of the design; or even, for the greater security, to apply them on the other side; especially yellow, which is very pernicious to the other colours, by blending therewith. And here too, as in pieces of black and white, particular regard must always be had not to lay colour on colour, or lay on a new lay, till the former are well dried.

It may be added, that the yellow is the only colour that penetrates through the glass, and incorporates therewith by the fire; the rest, and particularly the blue, which is very difficult to use, remaining on the surface, or at least entering very little. When the painting of all the pieces are finished, they are carried to the furnace, or oven, to anneal or bake the colours.

GLASS of Lead, a glass made with the addition of a large quantity of lead; of great use in the art of making counterfeit gems.

It is made thus: Put a large quantity of lead into a potter's kiln; and keep it in a state of fusion, with a moderate fire, till it is calcined to a very grey, loose powder: then spread it on the kiln, and give it a greater heat, continually stirring it, to keep it from gathering into lumps; continue this several hours, till the powder become of a fair yellow; then take it out, and sift it fine: this is called calcined lead. Take of this calcined lead fifteen pounds, and crystalline or other frit, twelve pounds; mix these well together; put them into a pot, and set them in the furnace for ten hours, then cast the whole, which will now be perfectly melted, into water; separate the loose lead from it; and return the metal into the pot: and after standing in fusion twelve hours more, it will be fit for work. This glass is capable of all the colours of the gems in great perfection.

Log-GLASSES, in the marine, glasses that run a half minute and quarter-minute, to measure the ship's way at the time of heaving the log. See *Log*:



Watch-GLASSES, certain glasses to measure and divide the watches at sea; they are of four and two hours, and of half an hour.

GLAUBER'S SALT, a cathartic or purging salt, thus made. Take of the cake that remains after the distillation of Glauber's spirit of sea-salt; dissolve it in hot water, and filter the solution through paper: then reduce the salt into crystals. It is given in doses from half an ounce to an ounce.

GLAUCOMA, in surgery, a disease of the eye, wherein the crystalline humour is turned of a bluish or greenish colour, and its transparency thereby impaired.

GLAZIER, an artificer who works in glass, and whose principal business is in fitting panes of glass to sashes, pictures, &c. and in making lead lights for window frames, cleaning of sash-windows, &c.

GLAZING, in pottery, a composition applied to vessels of earth, &c. to render them more beautiful, and prevent fluids from penetrating them.

GLEBE, among miners, a piece of earth, wherein is contained some mineral ore. See *Ore*.

GLEBE, in law, the land belonging to a parish church, besides the tithes.

GLEET, in medicine, the flux of a thin limpid humour from the urethra. See *Gonorrhœa*.

GLENE, in anatomy, a shallow cavity of any bone, which receives another bone in articulation. It also signifies the cavity or socket of the eye.

GLOBE, in the language of geometers, a round solid body, formed by the rotation of a semi-circle about its diameter, remaining fixed until it return to the place again from whence it began to move; whence that point, which was before in the middle of the diameter, and was the center of the generating circle, becomes now the center of the globe itself, as being equally distant from every point in the generated surface.

The artificial spherical body, from the exact similitude it has to our ball of earth, as has been proved from manifold observations, and particularly from the observations made of eclipses, has been chosen by geographers, as the fittest and properest instrument to delineate upon its outward surface the external appearance of this our globe; so that the terrestrial globe is an artificial representation of this our terraqueous globe, upon whose convex superficies the form of the habitable world

is delineated, and all the parts of the earth and sea are described in their natural form, order, distance, and situation. See *Plate XXII. fig. 1.*

And because the celestial bodies appear to us as if they were all placed in the same concave sphere, astronomers have likewise made use of the external surface of the globe, to lay down the stars upon in their just and due position and distance, and according to their several magnitudes. So that as the terrestrial globe is an artificial representation of the surface of this our terraqueous globe, as it would appear to us if placed at a convenient distance without it, and we could either be conveyed round it, or view it revolving about its own axis; so the celestial globe is also an artificial and lively representation of the starry heaven, supposing ourselves placed in the center, and the globe to be transparent, as it appears to us, when placed upon the convex surface of the earth; and which, considering its infinite smallness, with regard to the unmeasurable distance of the fixed stars, may be considered as the center of the universe. See *fig. 2.*

And as the geographers, for the ready distinction of places, have divided the surface of the earth into several parts, such as Europe, Asia, &c. and these are divided again into empires, kingdoms, &c. so the astronomers, that they may the better distinguish the fixed stars from one another, have in like manner divided them into several asterisms or constellations, each of which contains a system of several stars that are seen in the heavens near to one another; and have reduced these constellations into the forms of certain animals, such as bulls, bears, lions, men, &c. or in the image of things known to us, as of a crown, a harp, &c. which were esteemed by the ancients upon religious and civil accounts, and are still retained by the modern astronomers, to avoid that confusion which would necessarily follow, in comparing their observations with those that were formerly made.

We shall now proceed to give an account of the several appurtenances belonging to the globes.

1. The horizon is that great broad circle that divides the globe into two equal parts, termed the upper and lower hemispheres.

This circle is distinguished into two kinds; the one is called the sensible or natural horizon, and is that circle which bounds the utmost prospect of our sight, when

when we view the heavens round from any part of the surface of the earth or sea; the other is called the true or mathematical horizon, to which all astronomical calculations refer, and which obtains only in the mind, and supposes the eye to be placed in the very center of the earth, beholding half of the entire firmament at one view; which is represented by the uppermost surface of that broad wooden circle E (*fig. 1.*) upon the upper surface of the frame in which the globe is fixed, having two notches, the one in the north and the other in the south part of it, for the brazen meridian to stand in.

And as the globe is made to slide up and down in these notches, this circle is of great use in determining the times of the rising and setting of the sun or stars, and their continuance above the horizon; in shewing us the reason of the increase and decrease of the length of the day and night, &c. in all places upon the earth by inspection. Upon this broad horizon are described several other small circles.

The first or innermost contains the twelve signs of the zodiac, each sign being equal to thirty degrees. In the second they are distinguished by their proper names, marks, or characters. The third contains the days and months of the year, with the times when the principal fixed feasts or fasts are to be celebrated.

The outermost circle contains the points of the compass, with the names of the winds, as they are called by our seamen.

The next great circle BLD is the meridian, and is represented by the brazen frame or circle in which the globe is hung by the two wires which represent the two poles of the world, or the two extremities of the axis on which the globe hangs; within which it turns, dividing the globe into two equal parts, called the eastern and western hemispheres, and from its being made of brass is generally termed the brazen meridian. This circle is divided into four quadrants, answering to 360 degrees, the entire circumference of every circle, two of which commence at the equator, and increase towards each pole, in order to shew the declination of the sun or stars on the celestial globe, and the latitudes of places on the terrestrial globe; and the other two 90 degrees commence at either pole, and increase towards the equator, for the more easy and ready adjusting of the globe to the latitude of any particular place; for as the globe hangs in the meridian, and this is made to slide ea-

sily through the notches made in the north and south points of the horizon, it is very easy to elevate or depress either pole of the globe, so as that it shall stand at any particular elevation.

And as the globe is made to turn within this circle, upon the two extremities of the axis, called the two poles, this brazen meridian may be made to represent the meridian of any place upon the terrestrial globe, or a circle of right ascension, to any point whatsoever upon the celestial globe; and is of great use in the solution of all problems relating to either globe.

The next great circle is the equinoctial, as it is called on the celestial globe, or the equator on the terrestrial, and divides the globe into two equal parts, called the northern and southern hemispheres; this circle is of use in determining the right ascension of the sun or stars on the celestial globe, and the longitudes of places on the terrestrial.

The next great circle is the ecliptic, divided into twelve signs, and each sign into thirty degrees, dividing the globe into two equal parts, called the northern and southern hemispheres, with regard to the latitudes of the fixed stars and planets.

The sun in his annual motion, according to Ptolemy, passes through the ecliptic, and if we add to it a broad space of about eight degrees on each side, we shall have the zodiac, in which are the twelve asterisms, the most of which having the likeness of some living creature, was the occasion of giving it this name; and because the greatest latitude of any of the planets never amounts to eight degrees, the motion of the moon, as well as of the rest of the planets, will always be performed in this space.

The quadrant of altitude is a narrow thin plate of pliable brass, exactly answering to one fourth part of the meridian, and divided into 90 degrees, having a notch, nut, and screw at one end, to fasten it to the zenith in the meridian; and being thus fixed and turned round upon a small pivot, it supplies the place of an infinite number of vertical circles, and is very useful in determining the altitudes and azimuths of the celestial bodies, and in finding the times, &c.

The hour circle is a flat ring of brass AB, so contrived that it may be taken off and fixed about either pole of the globe; and when it is so fastened to the brazen meridian, the pole becomes its center, and to that end of the axis there is fixed an

index that turns round as the globe itself is turned round, and points out upon the horary circle the hour given or required; for this horary circle being the representation of the equator, which is carried about in one day, upon its upper surface are inscribed the twenty-four hours of the natural day, at equal distances from one another; the twelfth hour next towards the zenith representing twelve at noon, and the other nearest the nadir representing twelve at night; and the hours on the eastern side representing the morning hours, and those on the western side representing the afternoon hours; each hour answering to or corresponding with fifteen degrees of the great equinoctial, and is placed there for no other reason, but to save the trouble of reducing the degrees of the equinoctial into time, and the contrary.

The semi-circle of position, which is rarely or ever affixed to the globe, is a narrow thin plate of brass, exactly answering to one half of the horizon divided into 180 degrees, and usually affixed to the north and south ends of the horizon or meridian, and is of use in making out the cusps of the twelve houses, as they are usually called, in measuring the distances between any two places upon the surface of the earth, or any two stars upon the celestial globe, and may serve for a double quadrant of altitude, &c. And lastly, if a mariner's compass, duly touched with a loadstone, be fixed upon the pediment or wooden frame which contains the globe, or in some part of the broad wooden horizon, so that the true meridian of the compass may lie exactly parallel to the plane of the brazen meridian; the globes are prepared for any use to which they may be applied, and ready for the solutions of all problems that can be proposed relating to them.

Problems more immediately relating to the Terrestrial GLOBE.

1. To find the distance between two places upon the globe: lay the quadrant of altitude upon the globe, so that the graduated edge may pass through both the places, and observe how many degrees and minutes are between them: or thus, with a pair of compasses, set one foot upon the place, and open the compasses till the other foot stands upon the other place, then carry this distance to the equator, and setting one foot of the compasses upon the first meridian, observe how many degrees and minutes it is, which you may

turn into English miles, by multiplying by 69.5.

2. To find all places that are at a given distance from a place given: for example, to find all places that are ten degrees from London; open a pair of compasses till they measure ten degrees upon the equator, then setting one foot upon London, turn the other round, and it will pass through all the places that are ten degrees from London. By the same method we find all places that are at an equal distance from any given place: thus setting one foot of a pair of compasses upon London, and turning the other round through Rome, we see all places that are at the same distance from London that Rome is; as also what places are nearer to, or further from, London than Rome is.

3. To find the latitude of any place upon the globe: bring the place to the meridian, and the degree and minute under which it lies shew its latitude; thus, bring London to the meridian, as in *fig. 1.* and it appears to be in 51 deg. 31 min. north latitude. If a place lying under the equator be brought to the meridian, the mark over it will be 00, because it has no latitude. See *Latitude*.

4. To find all places which have the same latitude with a given place: suppose the given place be London, turn the globe round, and all places that pass under the same point of the meridian that London doth, have the same latitude with London. To find the difference of latitude of two given places of the globe, as London and Paris: find the latitude of each place, and the difference is easily known.

5. To find the longitude of any place upon the globe: bring the place to the meridian, and the degree and minute of the equator the meridian then passes through is the longitude; thus, if Rome be brought to the meridian, its longitude will appear to be 12° 45', upon our English globes, which have the first meridian drawn through London.

6. To find all places which have the same longitude with a given place, as Naples, it is sufficient to bring Naples to the meridian; for all places then under the meridian have the same longitude with Naples; to find the difference of longitude of two places, find the longitude of each, and the difference is easily known.

7. To find a place upon the globe, its longitude and latitude being given: let the place be Arafta, the longitude of which is 44° 55', east, from London, and

and latitude $36^{\circ} 0'$ north: bring $44^{\circ} 55'$ of the equator to the meridian, and under the 36° of north latitude is Araçta, or the place where it ought to be: for this method will serve to insert a place upon the globe, its longitude and latitude being given.

8. To rectify the globe to the latitude of any place: let the place be London, which lies in $51^{\circ} 31'$ north lat. move the brass meridian into the notches till the north pole of the globe is elevated $51^{\circ} 31'$ above the north side of the horizon, that is, till the elevation of the pole is equal to the latitude, as in *fig. 1*.

9. To rectify the globe to the horizon of any place, as London: rectify the globe to the latitude of London, and bring London to the meridian; the horizon of the globe will then represent the horizon of London.

10. To find towards what place of the compass any place lies from a given place: if it be enquired towards what point of the compass Lisbon lies from London, rectify the globe to the horizon of London, screw the center of the quadrant of altitude to the zenith point of the meridian, and turn the other end round till the graduated edge passes through Lisbon; then observe what point of the horizon in the circle in the winds the graduated edge passes through, which in the present case will be south-west by south, we say then Lisbon lies south-west by south from London.

11. To find the angle of position between any place and a given place: if it be enquired what is the angle of position of Lisbon and London, that is, what angle a great circle drawn through those two places makes with the meridian of London, do every thing directed in the last problem, and observe how many degrees of the horizon are contained between the graduated edge of the quadrant altitude and meridian, which in the present case will be $33^{\circ} 45'$; the angle of position of Lisbon with regard to London is then $33^{\circ} 45'$.

12. To rectify the globe to the meridian of the place where we are, which is the same thing as to rectify the globe to the situation the earth is in every day when it is noon at that place: suppose the place is London, rectify the globe to the horizon of London, then turn the frame of the globe about till the north and south points of the horizon of the globe are towards the north and south: the south may be known by the sun at noon; the north by

the pole-star any time of the night: the globe may also be rectified to the meridian of any place, by a meridian line, or by a magnetic needle in a compass box.

13. To rectify the globe to the present situation of the earth at any hour of the day: if you be in London, and would bring the globe into the situation the earth is in at four in the afternoon: rectify the globe to the meridian of London, and since the rotation of the earth carries the meridian and hour circles of London upon the globe coinciding with the like circles upon the earth, the situation of the globe will then correspond to that of the earth; and if it stands in the sun, it will be illuminated as the earth is.

14. The hour of the day being given at one place, as London, to find what hour it is at any other place upon the globe, as Naples: rectify the globe to the horizon of London, set the hour index at twelve at noon, turn the globe round till Naples is at the meridian, the index will then shew what hour it is at London, when it is noon at Naples: thus, if it points at 11 in the morning, it shews that it is 11 in the morning at London, when it is noon at Naples; and consequently, whatever is the time given at London, the time of the day at Naples is an hour forwarder in the day; as if it be two in the afternoon at London, it is three in the afternoon at Naples, &c.

15. By knowing the time of any particular phenomenon, to find its position in the heavens, and where it may be visible: bring that part of the globe to which the sun, moon, or planet, will be vertical at the given time, to the zenith; then will such phenomena as are momentary, be visible to all the inhabitants of the earth that are now above the horizon: and if you rectify the quadrant, and lay it over each particular place, it will shew the altitude of it, as also the azimuth; opposite to which in the heavens is the vertic circle, in which the object will be found.

Thus the middle position of an eclipse, transit, or occultation of the heavenly bodies may be nearly determined to any given place upon earth; but for the beginning and end of the same, a new operation will be required.

Problems more immediately relating to the Celestial GLOBE. Fig. 2.

1. To find the right ascension and declination of any star. The given star being found, bring the center of it to the south-part of the meridian; then, right above it, you will find the declination, and

and in the equinoctial, the right ascension : the former in the meridian, the latter cut by it.

2. To find the latitude and longitude of any star, and the place of any star, and the place of any planet, if marked on the globe : First, bring the solstitial colure to the brazen meridian, that is, to be directly under it : then elevate or depress the pole of that hemisphere, in which the star is found, till the poles of the ecliptic be exactly in the zenith, and nadir, that is, till the ecliptic coincide with the horizon ; keeping the globe in this position, rectify the quadrant of altitude, and move it till its graduated edge pass or lie just over the center of the given star, and there fix it. Then see what degree lies over-against the star's center on the quadrant, and what portion of the ecliptic, now lying in the horizon, is cut by the quadrant, and the former will be the latitude of the said star, and the latter its longitude from Aries.

3. To find the rising and setting of any star, &c. The globe being rectified, bring the star, whose rising is required, to the east part of the horizon ; then the index of the hour circle will shew the hour and minute of its rising ; and in like manner, if the globe is turned to the west, it will shew the setting.

N. B. The rising and setting of any star being found in hours and minutes, the one subtracted from the other, that is, the first from the last, gives the nocturnal arch, or the time of its stay above the horizon : but if the setting be less than the rising, add twelve hours thereto, and from the whole deduct the rising, and there will remain the sum required.

4. To know at any time what stars are ascending or descending, move the globe about, all things being rectified as above, to the given hour, and there fix it ; and then observing what stars lie even with the horizon, those on the east side are said to be rising, and those on the west setting. Those under the meridian are said to be culminating, being then full south ; as those on the east side of the globe are ascending, and those on the west descending, what are below the horizon being invisible. Lastly, if you place the quadrant of altitude over the center of any particular star, it will shew you its altitude, and at the same time gives, upon the horizon, the azimuth required.

5. How to distinguish one star from another in the heavens, and know them by their names on the globe. The meri-

dian being placed due north and south, and the globe rectified to the time and latitude required, each part of the globe will correspond with its respective constellation in the heavens ; so that if the globe was transparent, and the observer's eye placed in the center, every artificial star painted upon it would appear concentric with the real one.

To find their amplitude, and their oblique ascension or descension, observe what degree of the equator rises or sets with each, or any one of them, and that is the thing required ; or if the amplitude be desired, see upon what point of the compass they first appear, and then that distance from the east or west point of the horizon, reduced into degrees, will give the quantity of the amplitude required.

6. To find the hour of the night. The globe being rectified, bring the given star to the quadrant of altitude, and see that the known elevation, which in this case must always be taken by observation with an instrument, be cut thereby, then will the hour index point to the time required ; or if any known star be in the meridian, the hour will be shewn, without knowing the altitude, by the index only.—In like manner may be found the hour of the day by the sun, his altitude being given.

7. To know what stars are visible in any latitude, and in what latitude any particular star first appears : rectify the globe according to the latitude of the place required, and then, turning it round, you will, according to the season of the year, find what constellation will be visible at that time.

If again you bring any particular star to the meridian, and move the globe so as to bring the said star to the horizon, you will find, by allowing for the density of the atmosphere in proportion to the several magnitudes, in what latitude it will first become visible.

N. B. All those stars whose distance from the elevated pole is less than the latitude of the place, never set to their respective inhabitants ; as their opposite ones, being equally depressed, never rise.

Patent GLOBES, those with Mr. Neal's improvements, for which he obtained his majesty's letter's patent.

Problems peculiar to the Patent GLOBE.—1. *To rectify these globes.* This, on the celestial globe, is performed in the same manner as on the common globes : but the terrestrial globe admits of no such rectification ; for instead of raising or lowering the pole of the globe itself, according

to the latitude of the place, we must here rectify a moveable brais-horizon, so as that the given place shall be in the zenith of the said horizon. 2. *To rectify the sun and moon according to these globes.* Having found the sun's place in the ecliptic, in the common way, turn the sun about by its stem till it is directly opposite to the same sign and degree of the ecliptic upon the globe. The same may also be done with respect to the moon, having first found her place by an ephemeris for that day. 3. *To shew on these globes the cause of an eclipse of the sun or moon.* This is self-evident on either globe, by turning them by the winch till the two luminaries come in conjunction with, or opposite to each other, provided they happen to be in or near the nodes. 4. *To explain the reason why they happen no oftener.* This will appear no less evident, by setting the moon to any considerable latitude, and turning the globe till she comes in conjunction with the sun; for then the pointer from the sun will be seen to pass either above or below her, according as she is in north or south latitude: so that there can be no eclipse of the sun, when the moon is not in or near her nodes. 5. *To exhibit a natural representation of the retrograde motion of the moon's nodes.* This is done by only turning the globe with the winch, and observing that the place where the moon crosses the ecliptic, in its motion round the earth, is every time in different places; which are found to be retrograde, or contrary to the order of the signs; that is, they move backward through all the signs from east to west. 6. *The day and hour of a solar eclipse being given, to find all those places on the globe to which the same will be visible.* Turn the globe till the given day comes opposite to the sun, and the place where you are to the pointer; set the index to 12; then turn the globe till the index points to the given hour; set the moon in conjunction with the sun; then all the places above the solar horizon are those to which the eclipse will be visible. 7. *To find the same in a lunar eclipse.* Proceed as in the last problem; only instead of the moon's being in conjunction, she must now be in opposition; and instead of viewing all the countries on that side of the horizon towards the sun, you must survey those on the opposite side; for they are the countries to which the lunar eclipse will be visible. 8. *To exhibit the phases of Mercury and Venus.* Set them to any given station within the enlightened he-

misphere of the celestial globe; and it may be observed, that their different phases in those several stations will be in all respects analogous to those of our moon. 9. *To demonstrate, that in a certain latitude, the inhabitants may observe the sun, moon, Mercury, and Venus, all rising together on a particular day; and yet, on the same day, may see the moon set twelve hours before the sun, Mercury fourteen hours after the moon, and Venus six hours after all three.* Rectify the globe to the latitude of 66 one half; let the moon rise near the tropic of Capricorn, the sun at the beginning of Aries, Mercury about fifteen degrees in Aries, and Venus about eighteen degrees in Taurus, with five or six degrees of north latitude; then turn the globe about, and you will find by the index the difference of time sought for. 10. *To find the height of the diurnal arch of the luminaries and planets aforesaid, on any given day.* The globe being rectified, screw the quadrant of altitude to the zenith of the place, which bring to the meridian; then turn about the globe to the given day, and the degree of the quadrant, each respectively pass over, is the height of their arches sought. 11. *To shew why neither Mercury nor Venus can be seen on the meridian of London at midnight, as all the other planets at certain times are.* Set these two planets to their greatest elongation or distance from the sun; and by turning the globe about, the impossibility of the thing will be evident.

GLOBULAR, in general, an appellation given to things of a roundish figure, like that of a globe.

GLOBULE, a diminutive of globe, frequently used by physicians in speaking of the red spherical particles of the blood.

* GLOCESTER, the capital of Gloucestershire, was called Caer-Glowi by the ancient Britons. This city lies extended along the Severn, and on that side where it is not washed by the river, it had a strong wall, which was demolished after the Restoration, because the citizens had shut the gates against Charles I. in 1643. The castle, which was once an handsome structure, after having been in part demolished, was converted into a common prison for debtors and felons. In the reign of William the Conqueror, and before, the chief trade of this city was forging iron. After the coming in of the Normans, it underwent calamities in the barons wars, being plundered by Edward, the son of Henry III. and afterwards almost laid in ashes, by a casual fire. It

was made a borough by king John, to be governed by two bailiffs, and Henry III. who was crowned here, made it a corporation. On the south side of the abbey Edward I. erected a noble free-stone gate, which is still called Edward's Gate. It was repaired by the last abbot, but almost demolished by the civil wars. Richard II. gave it his sword and cap of maintenance. It was erected into a bishop's see by Henry VIII. and had eleven parish churches, but five of them were demolished at the siege in 1643. It was formerly the seat of a British king, as appears from an inscription in the bishop's palace. Here is an hospital for the maintenance of fifty-four poor men and women, with a minister, physician, and surgeon. Sir Robert Rich, bart. a native of this place, gave six thousand pounds by will for a blue-coat hospital, wherein are twenty boys, ten poor men, and as many women; and they have lately erected an infirmary. The present government of this city is by twelve aldermen, who are justices of the peace, out of which number the mayor is annually chosen. There are a recorder, a town-clerk, and so many common-council-men as, with the aldermen, are not to exceed forty, nor be less than thirty. Two out of these are yearly chosen sheriffs. It has two markets, which are on Wednesdays and Saturdays. Its fairs are on April 5, for cheese, July 5, September 28, and November 28, for cattle. It is thirty-six miles north-north-east of Bristol, twenty-six south of Worcester, forty-seven west of Oxford, and one hundred and four west-by-north from London. Long. 2. 16. W. Lat. 51. 50. N.

* GLOCESTERSHIRE, a large inland county, having Monmouthshire and Herefordshire on the west, Worcestershire on the north, Warwickshire and Oxfordshire on the east, and Wiltshire and Somersetshire on the south. It abounds in grain of all sorts, cattle, sheep, fine wool, butter, cheese, venison, fowls, and game. Here are woods, parks, iron mines, and orchards which afford good cyder and perry. The principal rivers are the Severn and the Wye, which last divides it from Monmouthshire. It has likewise the Isis, the Churn, the Leckie, the Coln, the Windruth, the Everlode, the Leden, the Avon, the Swiliate, the Caron, and the Stour. It is in length, from north-east to south-west, fifty miles, and in breadth about twenty-six. It sends six members to parliament, four for the boroughs, and two

for the county. The air is generally very good, and the soil fruitful. Cotswold hills, on the east part, feed many flocks of sheep, and westward, beyond the Severn, is the forest of Dean. Between them are the rich vales of Gloucester, and towards the north those of Evesham. The Severn, called in Welsh Haulren, is a large river, upon which the tide runs as far as Tewksbury, famous for its abbey before the dissolution of the monasteries. Here the Lancastrians were defeated, and here Edward, the son of Henry VI. was killed. The river divides into two streams, and forms the isle of Alney, near Gloucester, the capital of the county. The passage over the Severn, in the road from Bristol to Wales, is at Aust, where there is a ferry. To the east of this is Thornbury, where the foundation of a magnificent castle was laid by the duke of Buckingham, who was beheaded by Richard III.

GLORIA PATRI. See *Doxology*.

GLORIOSA, the superb lilly, in botany.

GLOSS, in matters of literature, an exposition or explication of the text of any author, whether in the same language, or any other; in which sense it differs little from commentary.

GLOSS, among artificers, the lustre or brightness set upon cloth, silk, and the like.

GLOSSARY, *Glossarium*, a sort of dictionary, explaining the obscure and antiquated terms in some old author.

GLOSSOPETRA, in natural history, a genus of extraneous fossils, so called from their having been supposed the tongues of serpents turned to stone, though they are really the teeth of sharks, and are daily found in the mouths of those fishes, wherever they are taken.

GLOTTIS, in anatomy, the mouth or aperture of the larynx, through which the air ascends and descends in respiring.

GLOW-WORM, the English name of an insect, called by zoologists *cicindela*.

GLUE, among artificers, a tenacious viscid matter, serving as a cement to bind or connect things together.

Glues are of different kinds, according to the various uses they are designed for, as the common glue, glove-glue, and parchment glue; whereof the two last are more properly called size. See *Size*.

The common or strong glue is chiefly used by carpenters, joiners, cabinet-makers, &c. and the best kind is that made in England, in square pieces of a ruddy brown.

brown colour; and, next to this, the Flanders glue. It is made of the skins of animals, as oxen, cows, calves, sheep, &c. and the older the creature is, the better is the glue made of its hide. Indeed, whole skins are but rarely used for this purpose, but only the shavings, parings, or scraps of them; or the feet, sinews, &c. That made of whole skins, however, is undoubtedly the best; as that made of sinews is the very worst.

The best glue is that which is oldest; and the surest way to try its goodness, is to lay a piece to steep three or four days, and if it swell considerably without melting, and when taken out resumes its former driness, it is excellent.

A glue that will hold against fire or water, may be made thus: mix a handful of quick-lime with four ounces of linseed-oil; boil them to a good thickness, then spread it on tin-plates in the shade, and it will become exceeding hard, but may be easily dissolved over a fire, as glue, and will effect the business to admiration.

GLUTÆUS, in anatomy, the name of three muscles, which form the buttocks, and from their size are called maximus, medius and minimus.

GLYCINE, scarlet-pea, in botany.

GLYCONIAN VERSE, in ancient poetry, consists of three feet, whereof the first is spondee, the second a choriambus, and the last a pyrrhichius; or the first may be a spondee, and the other two dactyls.

GLYCYRRHIZA, liquorice, in botany, a genus of plants.

GLYPH, in sculpture and architecture, any canal or cavity, used as an ornament.

GLYSTER. See *Clyster*.

GNAPHALIUM, cudweed, in botany, a genus of plants.

GNAT, in zoology, an insect of the fly-kind, called by authors *culex*.

GNOMES, *Gnomi*, certain invisible people, who, according to the Cabbalists, inhabit the inner parts of the earth. They are supposed small in stature, and the guardians of quarries, mines, &c.

GNOMON, in dialling, the style or pin of a dial, whose shadow serves to point out the hour.

The gnomon of every dial is supposed to represent the axis of the world, and therefore the two ends, or extremities thereof, must answer to the north and south poles.

GNOMON, in geometry. If a parallelogram be divided into four lesser ones by two right lines drawn respectively parallel to the sides thereof, and one

of these parallelograms be retrenched, or taken away; the remaining three will form a gnomon.

GNOMON, in astronomy, a pillar, &c. erected to find the meridian altitudes of the sun and stars by its shadow.

The method of finding the sun's meridian altitude by the help of a gnomon was much used by the ancients. It must be observed, that the greater the height of the sun is, the shorter is the shadow of a gnomon, and the contrary. In making observations for determining the meridian altitudes of the sun and stars, it was usual to set down what proportion the length of the shadow bore to the height of the pillar; that is, the height of the pillar being divided into a certain number of equal parts, to say how many of these parts the length of the shadow amounted to at the equinoxes or solstices. The most ancient observation of this kind, that we meet with, is that made by Pytheas, in the time of Alexander the Great, at Marseilles, where he found the height of the gnomon was to the meridian shadow, at the summer solstice, as 213 1-8 to 600; the same as Gasfendus found it to be, by an observation made at the same place, almost 2000 years after, in the year 1636.

GNOMONICS, *Gnomonica*, the art of dialling, or of drawing sun and moon dials, on any given plane. See *Dial*.

GNOSTICS, in church-history, christian heretics so called, it being a name which almost all the ancient heretics affected to take, to express that new knowledge and extraordinary light to which they made pretensions; the word gnostic signifying a learned, or enlightened person.

GOAT, *Capra*, in zoology, a quadruped of the order of the pecora. See *Capra*.

GOAT-SUCKER, *Caprimulgus*, in ornithology, a species of *hirundo*.

GOD, *Deus*, the Supreme Being, the first cause or creator of the universe, and the only true object of religious worship. The Hebrews called him Jehovah; which name they never pronounced, but used instead of it the words Adonai, or Elohim. God, says Sir Isaac Newton, is a relative term, and has respect to servants. It denotes, indeed, an eternal, infinite, absolutely perfect being: but such a being without dominion, would not be God. The word God frequently signifies lord, but every lord is not God. The dominion of a spiritual being, or lord, constitutes God; true dominion, true God; the supreme, supreme;

supreme; pretended, pretended. From such true dominion it follows that the true God is living, intelligent, and powerful; and from his other perfections, that he is supreme, or supremely perfect. He is eternal and infinite, omnipotent and omniscient; that is, he endures from eternity to eternity, and is present from infinity to infinity. He governs all things that exist, and knows all things that are to be known. He is not eternity or infinity, but eternal and infinite. He is not duration and space, but he endures and is present; he endures always, and he is present every where; and by existing always and every where, constitutes the very things we call duration and space, eternity and infinity. He is omnipresent, not only virtually, but substantially; for power without subsistence cannot subsist. All things are contained and move in him, but without mutual passion, that is, he suffers nothing from the motions of bodies, nor do they undergo any resistance from his omnipresence.

It is confessed, that God exists necessarily; and by the same necessity he exists always and every where. Hence also he must be perfectly similar; all eye, all ear, all brain, all arm, all perfection, intelligence, and action; but after a manner not at all corporeal, not at all like men; after a manner altogether unknown to us. He is destitute of all body, and bodily shape, and therefore cannot be seen, heard, or touched; nor ought to be worshipped under the representation of any thing corporeal. We know him only by his properties, or attributes, by the most wise and excellent structure of things, and by final causes: but we adore and worship him only on account of his dominion: for God, setting aside dominion, providence, and final causes, is nothing else but fate and nature.

The plain argument, says Mr. Maclaurin, for the existence of the Deity, obvious to all, and carrying irresistible conviction with it, is from the evident contrivance and fitness of things for one another, which we meet with throughout all parts of the universe. There is no need of nice or subtle reasonings in this matter; a manifest contrivance immediately suggests a contriver. It strikes us like a sensation; and artful reasonings against it may puzzle us, but it is without shaking our belief. No person, for example, that knows the principles of optics and the structure of the eye, can believe that it was formed without skill in that science; or that the ear was formed without the knowledge of sounds; or that the male and female in

animals were not formed for each other, and for continuing the species. All our accounts of nature are full of instances of this kind. The admirable and beautiful structure of things for final causes, exalts our idea of the contriver: the unity of design shews him to be one. The great motions in the system, performed with the same facility as the least, suggest his Almighty power, which gave motion to the earth and the celestial bodies with equal ease as to the minutest particles. The subtilty of the motions and actions in the internal parts of bodies, shews that his influence penetrates the inmost recesses of things, and that he is equally active and present every where. The simplicity of the laws that prevail in the world, the excellent disposition of things, in order to obtain the best ends, and the beauty which adorns the works of nature, far superior to any thing in art, suggest his consummate wisdom. The usefulness of the whole scheme, so well contrived for the intelligent beings that enjoy it, with the internal disposition and moral structure of those beings themselves, shew his unbounded goodness. These are the arguments that are sufficiently open to the views and capacities of the unlearned; while, at the same time, they acquire new strength and lustre from the discoveries of the learned. The Deity's acting and interposing in the universe, shew that he governs, as well as formed it; and the depth of his counsels, even in conducting the material universe, of which a great part surpasses our knowledge, keep up an inward veneration and awe of this great Being, and dispose us to receive what may be otherwise revealed to us, concerning him. It has been justly observed that some of the laws of nature now known to us, must have escaped us, if we had wanted the sense of seeing. It may be in his power to bestow upon us other senses, of which we have at present no idea; without which it may be impossible for us to know all his works, or to have more adequate ideas of himself. In our present state, we know enough to be satisfied of our dependency upon him, and of the duty we owe to him, the Lord and disposer of all things. He is not the object of sense; his essence, and indeed that of all other substances, is beyond the reach of all our discoveries; but his attributes clearly appear in his admirable works. We know, that the highest conceptions we are able to form of them, are still beneath his real perfections; but his power and dominion over us, and our duty towards him, are manifest.

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With respect to Christians it will be sufficient to mention, that they were very early divided in opinion, with regard to the nature and essence of the Supreme Being; a great part worshipping three persons in the unity of the godhead, while others absolutely rejected a trinity of persons, and asserted the unity of the Divine nature, both with respect to person and substance. See *Trinitarian*.

GODDESS, a heathen deity of the female sex.

GOD-FATHERS and GOD-MOTHERS, persons who undertake to answer for the future conduct of infants, at their baptism. This custom is of great antiquity in the Christian church, and was, in all probability, instituted to prevent children from being brought up in idolatry, if their parents should die before they arrived at years of discretion.

GOLD, *Aurum*, the sol and rex metallorum of the chemists, a yellow metal scarce at all elastic or sonorous, very soft and flexible, the most ductile of all metallic bodies. Dr. Halley took one grain of gilt silver, of which only one forty-eighth part was gold: this grain was drawn into a wire two ells in length, which, examined by a microscope, appeared every where covered with the gold: a piece of the wire being put into aqua-fortis, the silver was eaten out, and a tube of gold remained, which, notwithstanding its extreme thinness, was still opaque.

Gold is, of all natural bodies, the most ponderous: hence it sinks into quicksilver, whilst all other substances, platina excepted, swim on the surface. It is upwards of nineteen times heavier than an equal bulk of water: a Paris cubic foot is reckoned to weigh 1368 pounds. From its greater density it becomes sensibly hotter than other bodies when laid along with them in hot water.

Gold melts in a red heat, much sooner than copper or iron; though much later than lead or tin. It is of all metals the most fixed, or permanent in the fire: an ounce has been kept for two months together, in a glass-house furnace, which of all furnaces gives the most vehement heat, without suffering the least diminution of its weight.

Gold dissolves in a mixture of the nitrous and marine acids, called, from its action on this rex metallorum, aqua-regia: either of these acids singly have no effect upon it; nor is it acted on by the vitriolic. Boerhaave says that sea-salt or sal gem are the

only menstrua of gold; and that both these salts dissolve it, whether applied in the form of a lixivium or spirit: experience affords no foundation for this assertion. The solution in aqua-regis is of a gold yellow colour, and stains the skin, wherever it touches, of a fine purplish red, which is not easily got off.

Singular and unalterable as the properties of gold appear to be, they are easily mastered by chemistry. A single grain of tin will destroy the ductility of a thousand grains of gold; rendering the most malleable gold not only incapable of being extended, but of bearing the hammer at all. In Kunckel's *Laboratorium Chymicum*, there are processes by which gold may be sublimed and distilled over the helm; and surely what sublimes or distills has lost its fixity. Mercury-sublimate and sal-ammoniac volatilize. There is a certain common and well known subject, plentifully made use of by every body, which robs gold of its lustre, its colour, and its malleability, and renders it white and brittle: but this substance, as it might give rise to abuses, I forbear to name. Gold melted repeatedly with borax becomes paler and paler on every fusion; and there are sundry other substances, as butter of antimony, zinc, and the smoky spirit of tin, from which it suffers notable alterations. After all these changes, however, it is still reducible to its original state; the brittle, the white, the sublimed, the distilled gold, may all be restored to the purity and properties of the gold at first. The chemists have long laboured in the destruction of this metal, and allow it to be easier to make gold than to destroy it: tho' it does not appear that either of these problems is entirely beyond the reach of art, for a little gold has in divers experiments been produced; and gold was destroyed in the presence of Mr. Boyle.

Aqua-regia, the proper menstruum of gold, is commonly prepared, by dissolving one part of sal-ammoniac in four of aqua-fortis, or spirit of nitre. Kunckel directs a commodious method of obtaining the exact proportions necessary for the solution. The gold, either in form of leaves, or granulated, or flatted into thin plates, then made red-hot and cut in small pieces, is to be put into a suitable quantity of aqua-fortis, a gentle heat applied, and some powdered sal-ammoniac added gradually, by little and little at a time, till the whole of the gold is dissolved.

The largest quantities of gold are re-
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with in the Spanish West-Indies : there are mines of it also in some parts of Europe, particularly in Hungary and Transylvania. It is either imbedded in flinty or other stones, or intermingled among the loose earth ; always in its metallic form, though the particles are commonly very small, and often indistinguishable. It is never found in the state of a true ore, unless when blended with a large proportion of other metals: Some gold is also met with in sundry rivers, as the Tagus, the Ganges, the Rhine, the Saale, the Niger, the Danube, and many others, commonly in fine dust, often in flat molecule, sometimes suspended by the water in visible atoms, which settle upon standing, and are distinguished by the name of river or wash-gold : these golden particles doubtless proceed from some mines or veins of gold ; from which the metal has been washed out, and carried by the stream.

Gold coins and utensils are not made of pure gold, but have always an alloy of silver, or copper, or both together, by which the gold is rendered firmer, harder, and more sonorous. When gold is perfectly pure, it is called gold of twenty-four carats ; the meaning of which is, that in an ounce of the metal all the twenty-four scruples are pure gold. If only twenty-three scruples are fine gold, and the other scruple a baser metal, it is called gold of twenty-three carats ; and in general, the number of carats by which the fineness is expressed, denotes the number or scruples of fine gold in an ounce or twenty-four scruples of the mixed. The ancients supposed the gold of different countries to differ in quality. But gold, when perfectly pure, is always one and the same, wherever it is to be found ; no other differences being observed in it than what proceed from an admixture of some other metal.

There are different methods of separating gold from admixture of other metals. If only a base metal is mixed with gold, they may be separated by testing or cupellation with lead ; the base metal vitrifying with lead, whilst the gold remains unhurt.

Silver, which resists the destructive power of lead equally with gold itself, is separated by acid menstrua. For this purpose, we must first examine, whether the mixture contains most gold, or most silver : if the gold is found to prevail, the metal is to be flatted into plates, or gra-

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nulated, and put into a proportionable quantity of aqua-regis, which dissolves the gold, and leaves the silver in the form of powder at the bottom : the silver, washed and dried, may be melted into a mass, with the addition of a little tallow, and some nitre or borax ; and the gold may be recovered from the liquor by precipitation. If on the other hand, the quantity of silver is much greater than that of the gold, aqua-fortis is made use of, which dissolves the silver, and leaves the gold behind, in form of a black mass or powder, to be washed and melted with borax. If the proportions of the two metals are nearly equal, the mixture is melted with so much fresh silver as will make the whole quantity of silver at least three times greater than that of the gold : if the quantity of silver is much less than this, the best aqua-fortis will not be able to extract it from the gold : if much greater, the solution or extraction will go on the faster, but the gold will remain in form of powder, some particles of which may be in danger of being lost : if it is just thrice the weight of the gold, the gold retains the form of the original plates : from the gold making one fourth of the compound, the process is commonly called quartation. This method of parting the two metals is more commodious and effectual than that by aqua-regis ; aqua-fortis dissolving the silver, much sooner than aqua-regis does the gold ; and the former taking up none of the gold along with the silver, whereas the latter almost always dissolves a part of the silver along with the gold, especially if the aqua-regis is made with an under-proportion of marine acid.

Gold is likewise purified from silver by acids applied in the form of vapour free from phlegm. Thus applied, they extract small proportions of silver as well as large ones ; the gold being unable to defend that metal against the fumes, as it does against the acid in its liquid state. The marine vapours also, in this method of application, corrode the silver as effectually as the nitrous : the only difference is, that when corroded by the nitrous, such part as may remain in the pores of the gold, is easily dissolved and washed out by water, whereas with the marine, it forms a concrete not dissoluble in water.—The method of performing the process is this. Nitre, or common salt, (not both at once, for the vapour arising from the mixture would dissolve the gold as well as the silver) is mixed with an equal quantity of calcined
variol,

vitriol, by which its acid is extricated in the fire; and twice its weight of powdered bricks, to prevent the matter from melting and adhering to the surface of the metal. The gold impregnated with silver, is flattened into plates; cleansed by ignition from any external unctuousity that might impede the action of the acid; then stratified and every where surrounded with the mixture in a crucible or cementing pot; the vessel closely covered and luted; the fire gradually raised to a slight red heat, and kept up for twelve, sixteen, or twenty hours. It is often necessary to repeat the cementation; a part of the silver being apt to escape the action of the fumes, especially when the plates are of considerable thickness: the metal, after one cementation, must be melted and laminated afresh, before it is committed to another. These kinds of operations were formerly often practised; but have now in great measure given place to more advantageous and effectual methods of separation. The mixture with sea-salt is commonly called the legal cement, gold being the only metallic body, platina excepted, that is capable of resisting it.

The resistance of gold to aqua-fortis affords a ready method of distinguishing that metal from compositions resembling it in colour. If a line be drawn with the mass upon any smooth stone that does not dissolve in acids, a drop of aqua-fortis will take off the mark left by any of the base metals, whilst that made by gold remains untouched.

If gold contains copper, lead, or other imperfect metallic bodies, along with silver, it is purified first from the base metal by the test or cupel, and then separated from the silver by quartation.—It is purified also from all the metals by fusion with antimony, which absorbs or scorifies all but gold. Tin is most commodiously separated by injecting corrosive sublimate upon the gold in fusion. Mercury dissipated from it by bare ignition.

Gold is cleansed, from external impurities, by heating it red-hot, and washing it with weak aqua-fortis, brine of sea-salt, with tartar, &c. When pale, the colour is heightened, by melting it with copper, and afterwards separating the copper; or by a mixture of verdigrise and sal-ammoniac with vitriol or nitre. It is said that a mixture of gold with one third, or even with half its weight of silver, acquires, on cementation with verdigrise, the colour of pure gold. The silver how-

ever is easily discovered on the touchstone, by means of aqua-fortis: if a line be drawn with the compound metal, a little aqua-fortis, applied upon the part, will eat out the silver; and the remaining gold will appear specked and disunited. *Neumann's Chemistry.*

GOLD-WIRE, a cylindrical ingot of silver, superficially gilt, or covered with gold at the fire, and afterwards drawn successively through a great number of little round holes, of a wire-drawing iron, each less than the other, till it be sometimes no bigger than an hair of the head. See *Wire*.

It may be observed, that before the wire be reduced to this excessive fineness, it is drawn through above an hundred and forty different holes, and that each time they draw it, it is rubbed afresh over with new wax, both to facilitate its passage, and to prevent the silver's appearing through it.

GOLD-WIRE flattened, is the former wire flattened between two rollers of polished steel, to fit it to be spun on a stick, or to be used flat, as it is without spinning, in certain stuffs, laces, embroideries, &c.

GOLD-THREAD, or **SPUN GOLD**, is a flattened gold, wrapped or laid over a thread of silk, by twisting it with a wheel and iron bobbins,

GOLD-LEAF, or **BEATEN GOLD**, is gold beaten with a hammer into exceeding thin leaves, so that it is computed, that an ounce may be beaten into sixteen hundred leaves, each three inches square, in which state it takes up more than 159052 times its former surface. This gold they beat on a block of black marble, about a foot square, and usually raised three feet high: they make use of three sorts of hammers, formed like mallets, of polished iron.

GOLD-FINCH, in ornithology, the English name of a species of fringilla, with the wings variegated with black, yellow, and white.

GOLD-SMITH, or **SILVER-SMITH**, an artist who makes vessels, utensils, and ornaments in gold and silver.

Shell-GOLD, that used by the illuminers, and wherewith we write gold letters. It is made of the pareings of leaf-gold, and even of the leaves themselves, reduced into an impalpable powder, by grinding on a marble with honey. After leaving it to infuse some time in aqua-fortis, they put it in shells, where it sticks. To use it they dilute it with gum-water, or soap-water.

GOLDEN,

GOLDEN, that which has a relation to gold, or consists of gold, is valuable, or the like; as,

GOLDEN-BULL. See the article *Bull*.

GOLDEN-CALF, in Jewish antiquity, a figure which the Israelites cast in gold, and set up in the wilderness to worship during Moses's absence in the mount.

GOLDEN-FLEECE, in the ancient mythology, the skin, or fleece, of the ram upon which Phryxus and Hella are supposed to have swam over the sea to Colchis; which being sacrificed to Jupiter, its fleece was hung upon a tree in the grove of Mars, guarded by two brazen-hoofed bulls, and a monstrous dragon that never slept; but was at last taken and carried away by Jason, and the Argonauts.

GOLDEN-NUMBER, in chronology, a number shewing what year of the moon's cycle any given year is. See *Cycle of the Moon*.

GOLDEN-RULE, in arithmetic, is also called the rule of three.

GOMPHRENA, the purple everlasting flower, in botany.

It is a native of both East and West-Indies; and the flower is usually of a beautiful purple colour.

GONDOLA, a sort of barge curiously ornamented and navigated on the canals of Venice.

GONORRHOEA, in medicine, an involuntary efflux of the seminal juices, and some other recrementitious matter.

Authors take notice of three species of gonorrhœas; the first is a simple gonorrhœa, or perpetual efflux of the seminal juices, without any virulence: the second is a venereal, or virulent gonorrhœa, so called, though improperly, from its similitude to the preceding: the third is an involuntary efflux of a viscid white, or whitish fluid from the urethra, in consequence of a venereal gonorrhœa ill cured, or too frequently repeated.

GOOD, in general, whatever is apt to cause or increase pleasure, or diminish pain in us; or, which amounts to the same, whatever is able to procure, or preserve to us the possession of agreeable sensations, and remove those of an opposite nature.

Metaphysical **GOOD**, the same with perfection. See *Perfection*.

Moral **GOOD**, the right conduct of the several senses and passions, or their just proportion and accommodation to their respective objections and relations.

GOOSE, *Anser*, in ornithology, a well-

known bird of the anas-kind, with the back of a greyish brown colour, the belly and edges of the wing-feathers white.

Geese are fowls of great profit, both for food, for their feathers, and for their grease. For the gathering of their feathers, some authors advise their being pulled twice a year, viz. in March and August; yet this is certainly an unprofitable as well as a cruel practice; for the goose on being incapable of flight, easily falls a prey to the fox, and other ravenous creatures, and by uncloathing her, you occasion her getting cold, which suddenly kills her. 'Tis therefore most adviseable to stay till moulting time, or till you kill her, and then all her feathers may be made use of at pleasure. However, in the fens of Lincolnshire, &c. the geese both old and young are generally pulled twice a year.

GOOSE-BERRY, *Grossularia*, or *Ribes*, in botany.

The best way of raising these useful bushes is by cuttings, observing always to take the handsomest shoots, and that from branches that bear most fruit. These are to be planted in February.

There are a great many sorts of goose-berry, among which the white Holland kind is the fairest, and best bearer of all others; the berries being large, transparent, and well tasted. The English yellow goose-berry is known every where, and fittest for culinary uses while green. The hedge hog goose-berry is large, well tasted, and extremely hairy. There is also a sort of green goose-berry, that is a very pleasant fruit.

Goose-berries taken in season, produce a delicious wine, very proper for summer repasts. Also, if thoroughly pressed, with an addition of water, and well fermented, they yield in distillation the best brandy of any of our fruits, and little inferior to French brandy.

GOOSE-WINGS of a *Sail*, the clues, or lower corners, or a ship's main-sail or fore-sail, when the middle part is tied up or furled to the yard.

The goose-wings are only used in a great storm to scud under, when the sail at large, or even reefed, would be too much for the ship to carry at such a time.

GORDIAN KNOT, in antiquity, a knot made in the leathers or harness of the chariot of Gordias, king of Phrygia, so very intricate, that there was no finding where it began or ended.

The inhabitants had a tradition, that

the oracle had declared, that he who untied this knot, should be master of Asia. Alexander having undertaken it, was unable to accomplish it, when fearing lest his not untying it should be deemed an ill augury, and prove a check in the way of his conquests, he cut it atunder with his sword, and thus either accomplished or eluded the oracle.

GOKE, in heraldry, one of the abatements, which, according to Guillim, denotes a coward. It is a figure consisting of two arch lines drawn one from the sinister chief, and the other from the sinister base, both meeting in an acute angle in the middle of the fess point.

GORGE, *Gula*, in architecture, the narrowest part of the Tuscan and Doric capitals, lying between the astragal, above the shaft of the pillar and the annulets.

It is also used for a concave moulding, larger, but not so deep as a scotia, which serves for compartments, &c.

GORGE, in fortification, the entrance of the platform of any work.

GORGED, in heraldry, the bearing of a crown, coronet, or the like, about the neck of the lion, a swan, &c. and in that case it is said, the lion or cygnet is gorged with a ducal coronet, &c.

GORGONS, in antiquity, a warlike female nation of Lybia, in Africa, who had frequent quarrels with another nation of the same sex, called Amazons.

* **GORGONS**, in fabulous history, three sisters, the daughters of Phorcus and Ceta. They were named Medusa, Euryale, and Sthenio, and are represented as having snakes instead of hair, brazen hands and golden wings. Hesiod says they had but one eye between all the three, which they used by turns. They lived near the garden of the Hesperides, and transformed into stone all who looked at them. Perseus, with the assistance of Minerva, killed Medusa, when her sisters pursued him, and he escaped by putting on an helmet, lent him by Pluto, which rendered him invisible.

GOSHAWK, the English name of the yellow-legged falcon, with a brown back, and a white variegated breast.

GOSPEL, the history of the life, actions, death, resurrection, ascension, and doctrine of Jesus Christ.

The word is Saxon, and of the same import with the Latin term *evangelium*, which signifies glad tidings, or good news.

The history is contained in the writings of St. Matthew, St. Mark, St. Luke, and

St. John; who from thence are called evangelists. The Christian church never acknowledged any more than these four gospels as canonical; notwithstanding which, several apocryphal gospels are handed down to us, and others are entirely lost.

GOSSYPIMUM, cotton, in botany. See *Cotton*.

GOTHIC, in general, whatever has any relation to the Goths: thus we say, Gothic customs, Gothic architecture, &c.

Gothic architecture is far removed from the manner and proportions of the antique; having its ornaments wild and chimerical, and its profiles incorrect: however, it is frequently found very strong, and appears very rich and pompons, as may be seen in several of our English cathedrals. This manner of building was, originally, very heavy and coarse; but afterwards run into the opposite extreme, being slender, rich, and delicate to a fault. In the Gothic architecture we see high vaults raised on slender pillars; and every thing crowded with windows, roses, crosses, figures, &c.

GOVERNMENT, in general, the polity of a state, or an orderly power constituted for the public good.

Government is also a post or office which gives a person the power or right to govern or rule over a place.

Government is also used for the city, country, or place to which the power of governing is extended.

Government, in grammar, a part of construction usually called regimen.

GOUGE, an instrument or tool used by divers artificers; being a sort of round hollow chissel, for cutting holes, channels, grooves, &c. either in wood or stone. See *Joinery*.

GOUT, *Arthritis*, in medicine, as defined by Boerhaave, a very painful disease, whose seat is in the joints and ligaments of the feet, and whose principal times of invasion are the spring and autumn.

The curative intention, according to Wintringham, requires, first, that the primæ viæ be set free from a load of indigested crudities, and the viscera be restored to their pristine vigour; secondly, that the fluid stagnating in, and stuffing up the smaller vessels, may be expelled the body, and a free passage through the contracted vessels be restored.

The first intention may be answered by vomits and gentle cathartics repeated as occasion requires; by bitters, aromatics, anti-

antiscorbutic medicines ; by alkaline fixed salts, taken in small quantities for a long time ; by aliments and drinks that are nourishing, light, easy of digestion, quickly assimilated, and taken in due quantity ; by powerful exercise often repeated, and long continued ; and especially by riding in dry, serene, pure air ; by frictions ; by motion of the affected parts ; by going to sleep at early hours.

The second intention may be answered partly by the preceding, as well as by procuring gentle sweats ; by bathing in natural and artificial baths ; by sweating in a bagnio ; or by the use of volatile salts, and copious drinking of attenuating liquors, actually hot, in the morning while in bed, in order to procure a sweat ; as also by mercurial purges, taking a large quantity of diluents after them ; by frictions of the whole body, especially the parts affected, with hot, dry linen-cloths, till a redness appear ; by cold baths ; and the like.

To abate the excessive pain in the part affected, Boerhaave says, that if there be an absolute necessity, opiates may be given internally, and the patient may drink plentifully of hot whey, or any other liquor of the like nature. Externally, emollients and anodynes may be used, laid on pretty hot ; or the part affected may be beat with nettles ; or it may be anointed with terebinthinated balsam of sulphur ; or tow may be burnt thereon.

GRACE, *Gratia*, among divines, signifies any unmerited gift which God bestows on mankind.

Grace is divided into natural and supernatural : the natural including the gifts of being, life, of rational faculties, and immortal soul, &c. and the supernatural is considered as a gift conferred on intelligent beings in order to their salvation.

Act of GRACE, an act of parliament for a general pardon, and for setting at liberty insolvent debtors.

Days of GRACE, in commerce. See *Day*.

GRACES, in heathen mythology, three goddesses, whose names were Aglaia, Thalia, and Euphrosyne ; that is, shining, flourishing, and gay ; or according to some authors, Pasithea, Euphrosyne, and Ægiale. Some make them the daughters of Jupiter and Eurynome, or Eunomia, the daughter of Oceanus ; but the most common opinion is, that they were the daughters of Bacchus and Venus.

They are sometimes represented dressed,

but more frequently naked, to shew, perhaps, that whatever is truly graceful, is so in itself, without the aid of exterior ornaments. They presided over mutual kindness and acknowledgment ; bestowed liberality, eloquence, and wisdom, together with a good grace, gaiety of disposition, and easiness of manners.

GRADATION, in general, the ascending step by step, or in a regular and uniform manner.

GRADATION, in architecture, a flight of steps, particularly ascending from the cloister to the choir in churches.

GRADATION, in painting, a gradual and insensible change of colour, by the diminution of the tints and shades.

GRADATION, in rhetoric, the same with climax. See *Climax*.

GRAFT, or GRAFF, in gardening, a cion or shoot of a tree inserted into another, so as to make it yield fruit of the same nature with that of the tree from whence the graft was taken.

In the choice of grafts, the following directions should be carefully observed : 1st. That they are shoots of the former year. 2dly. That they are taken from healthy fruitful trees. And, 3dly. That you prefer those grafts which are taken from the lateral or horizontal branches, to those taken from the perpendicular shoots. These grafts should be cut off from the trees before the buds begin to swell, which is generally three weeks or a month before the season for grafting ; therefore when they are cut off, they should be laid in the ground with the cut downwards, burying them half their length, and covering their tops with dry litter, to prevent their drying : if a small joint of the former year's wood be cut off with the cion, it will preserve it the better ; and when it is grafted, this may be cut off ; for the grafts must be cut to a proper length before they are inserted into the stocks ; but till then, the shoots should remain their full length, as they were taken from the tree, which will preserve them better from striking. If these grafts are to be carried to a considerable distance, it will be proper to put their cut ends into a lump of clay, and to wrap them up in moss, which will preserve them fresh for a month or longer : but these should be cut off earlier from the trees, than those that are to be grafted near the place where the trees are growing. For the choice of stocks for grafting, see *Stock*.

GRAFTING, or **ENGRAFTING**, the taking a shoot from one tree, and inserting it in another, in such a manner that both may unite and form one tree.

The reason for grafting is, that as all good fruits have been accidentally obtained from seeds, so these when sown will often degenerate, and produce such fruits as are not worth cultivating : but when the shoots, cions, or grafts, are taken from such trees as yield good fruit, these will never vary from their kind, whatever be the stock, or tree, on which they are grafted.

The most proper season for grafting is in the spring, just before the rising of the sap, or at least before it rises in any great quantity : but the weather must be neither frosty nor wet ; nor should the wind blow very bleak or strong when this operation is performed : for on these circumstances, and upon the exact joining of the inner bark of the cion with the inner bark of the stock, so that the sap which flows between the bark and the wood may be communicated from the one to the other, the success of grafting chiefly depends.

The implements necessary for grafting are, a fine small hand-saw to cut off the heads of large stocks ; a good strong knife with a thick back to make clefts in the stocks ; a sharp pen-knife to cut the grafts ; a grafting chissel, and a small mallet to pare away the wood ; bafs, or woollen yarn to tie the grafts with ; and a quantity of clay, or cement, properly prepared, to lay over the incisions, in order to prevent their bleeding, and keep out the air.

The method of preparing the clay intended for this purpose, is to mix thoroughly together a quantity of strong, fat loam, some new stone-horse dung broken into small bits, a little tanners hair, or straw, cut very small, with a little salt, and as much water as will make the whole of the consistence of pretty stiff mortar.

The cement or composition which some have of late used, and which has been found to answer the design of keeping out the air better than the above clay, is made of turpentine, bees wax, and rosin, melted together. This composition, when of a proper consistence, is laid about a quarter of an inch thick, upon the cut part of the stock round the graft ; and has this farther advantage over the clay, that there is no danger of its being hurt by frost ; for cold hardens it ; and when the

heat of summer comes on, by which time it is no longer wanted on the tree, it will melt and fall off without any trouble.

GRAIN, a general name for all sorts of corn, as wheat, barley, oats, &c.

GRAIN is also the name of a small weight, the twentieth part of a scruple in apothecaries weight, and the twenty-fourth of a penny-weight troy. See *Weight*.

GRAIN also denotes the component particles of stones and metals, the veins of wood, &c. Hence cross-grained, or against the grain, is contrary to the fibres of wood, &c.

GRAMMAR, the art of speaking and writing any language with propriety.

GRAMMAR, a book containing the rules of this art, methodically digested.

GRAMMARIAN, one who is skilled in, or who teaches grammar.

GRAMMATICAL, belonging to grammar.

GRANADIER, a soldier armed with a sword, a fire-lock, a bayonet, and a pouch full of hand-granadoes. They wear high caps, are generally the tallest fellows, and are always the first upon all attacks.

Every battalion of foot has generally a company of granadiers belonging to it, four or five granadiers belong to each company of the battalion ; which, on occasion, are drawn out, and form a company of themselves. These always take the right of a battalion.

Horse-GRANADIERS, called by the French *grenadiers volans*, or flying-granadiers, are such as are mounted on horse-back, and fight on foot.

GRANADILLA, passion-flower, a plant called by Linnæus *passiflora*.

GRANADO, a hollow ball or shell, of iron or other metal, about two inches and a half in diameter ; which being filled with fine powder, is set on fire by means of a small fusee fastened to the touch-hole, made of the same composition as that of a bomb : as soon as the fire enters the shell, it bursts into many pieces, much to the damage of all that stand near. See *Bomb*.

GRANARY, a building to lay or store corn in, especially that designed to be kept a considerable time.

Experimental philosophy has proved that the air is the great source of corruption ; keep out that, and all is kept out ; and the most corruptible substances, such as meal, butter, milk, and the like, have been

been preserved fresh four months in the exhausted receiver of an air-pump.

In Egypt and most parts of Africa there are deep pits made in the solid rock; the descent into them is but just large enough for a man to go down into them by, but they grow larger as soon as the person is in, and are usually square, from thirty to forty feet in diameter. In these the great men of the country preserve their corn; they first strew over the floor with straw, then they lay on the corn; still, as the heap rises, placing a thin bed of straw between the corn and the sides, as they did at the bottom.

In this manner they proceed till the whole cavity is filled: when this is done, they cover the mouth of the entrance with a sort of hurdle of green boughs of trees, interwoven one with another. This they cover with about two feet thickness of sand, and over this raise a ridge of earth, well beaten together, in order to throw off the rain both ways, that none may settle on the place and soak into the magazine.

The corn thus stored up always keeps three, four, or more years very good.

The two great cautions to be observed in the erecting granaries, are to make them sufficiently strong, and to expose them to the most drying winds. The ordering of the corn in many parts of England is thus: to separate it from dust and other impurities after it is threshed, they toss it with shovels from one end to the other of a long and large room; the lighter substances fall down in the middle of the room, and corn only is carried from side to side, or end to end of it. After this, they screen the corn, and, then bringing it into the granaries, it is spread about half a foot thick, and turned from time to time about twice in a week; once a week they also repeat the screening it. This sort of management they continue about two months, and after that they lay it a foot thick for two months more, and in this time they turn it once a week, or twice, if the season be damp, and now and then screen it again. After about five or six months, they raise it to five or six feet thickness in the heaps, and then they turn it once or twice in a month, and screen it now and then. When it has lain two years, or more, they turn it once in two months, and screen it once a quarter, and, how long soever it is kept, the oftener the turning and screening is repeated, the better the grain will be found to keep.

It is proper to leave an area of a yard wide on every side the heap of corn, and other empty spaces, into which they turn and toss the corn, as often as they find occasion. In Kent they make two square holes at each end of the floor, and one round in the middle, by means of which they throw the corn out of the upper into the lower rooms, and so up again, to turn and air it the better. Their screens are made with two partitions, to separate the dust from the corn which falls into a bag; and when sufficiently full, this is thrown away, the pure and good corn remaining behind.

Corn has by these means been kept in our granaries thirty years; and it is observed, that the longer it is kept, the more flour it yields in proportion to the corn, and the purer and whiter the bread is, the superfluous humidity only evaporating in the keeping. At Zurich, in Switzerland, they keep corn eighty years or longer, by the same sorts of methods.

The public granaries at Dantzick are seven, eight, or nine stories high, having a funnel in the midst of every floor to let down the corn from one to another. They are built so securely, that though every way surrounded with water, the corn contracts no damp, and the vessels have the convenience of coming up to the walls for their lading. The Russians preserve their corn in subterranean granaries of the figure of a sugar-loaf, wide below, and narrow at top: the sides are well plastered, and the top covered with stones. They are very careful to have the corn well dried before it is laid into these store-houses, and often dry it by means of ovens; the summer dry weather being too short to effect it sufficiently.

GRAND, a term borrowed from the French, implying the same with great.

GRAND-JURY, the jury who finds bills of indictment at the sessions, &c. of the peace.

GRANITE, *Granita*, in natural history, a distinct genus of stones, composed of separate and very large concretions, rudely compacted together, of great hardness, and capable of receiving a very beautiful polish.

GRANIVORUS, in natural history, an epithet given to animals that feed on corn or feed.

GRANULATION, in metallurgy, the action of reducing metals to small particles in order to promote their fusion and mixture with other bodies.

GRAPES,

• GRAPES, the fruit of the vine. See *Vine*.

GRAPHOMETER, among surveyors, an instrument for taking angles, and generally called a semi-circle.

GRAPPLING, in the sea language, a sort of small anchor with four or five flukes or arms, commonly used to ride a boat.

Fire-GRAPPLING, an instrument nearly resembling the above, only that it is fitted with strong barbs in the room of flukes; and is fixed at the yard-arms of a fire-ship to grapple her adversary, and set her on fire.

GRASS, *Gramen*, in botany, a general name for most of the herbaceous plants used in feeding cattle.

The best season for sowing grass seed is the latter end of August, and the beginning of September, that the grass may be well rooted before the frost set in, which is apt to turn the plants out of the ground, when they are not well rooted. This seed should be sown in moist weather, or when there is a prospect of showers, which will soon bring the grass up; for, the earth being at that season warm, the moisture will cause the seed to vegetate in a few days; but, where this cannot be performed in autumn, the seeds may be sown in the spring: towards the middle of March will be a good time, if the season proves favourable,

The land on which grass seed is intended to be sown, should be well plowed, and cleared from the roots of noxious weeds, such as couch grass, fern, rushes, heath, gorse, broom, rest-harrow, &c. which, if left in the ground, will soon get the better of the grass, and over-run the land. Therefore, in such places where either of these weeds abound, it will be a good method to plow up the surface in April, and let it lie some time to dry; then lay it in small heaps, and burn it. The ashes so produced, when spread on the land, will be a good manure for it. The method of burning the land is particularly useful; especially, if it is a cold stiff soil; but where couch grass, fern, or rest-harrow, is in plenty, whose roots run far under ground, the land must be plowed two or three times pretty deep in dry weather, and the roots carefully harrowed off each plowing; which is the most sure method to destroy them.

Before the seed is sown, the surface of the ground should be made level and fine, otherwise the seed will be buried unequal,

The quantity of grass-seed for an acre of land is usually three bushels, if the seed is clean, otherwise there must be a much greater quantity allowed; when the seed is sown, it must be gently harrowed in, and the ground rolled with a wooden roller; which will make the surface even, and prevent the seeds being blown in patches. When the grass comes up, if there should be any bare spots, where the seed has not grown, they may be sown again, and the ground rolled, which will fix the seeds; and the first kindly showers will bring up the grass, and make it very thick.

Some people mix clover and rye-grass together, allowing ten pounds of clover, and one bushel of rye-grass, to an acre: but this is only to be done where the land is designed to remain but three or four years in pasture, because neither of these kinds are of long duration; so that, where the land is designed to be laid down for many years, it will be proper to sow with the grass-seed some white trefoil, or Dutch clover; which is an abiding plant, and spreads close on the surface of the ground, sending forth roots at every joint; and makes the closest sward of any, and is the sweetest feed for cattle: so that, whenever land is laid down to pasture, there should always be six or eight pounds of this seed sown upon each acre.

The following spring, if there should be any thistles, ragwort, or such other troublesome weeds, come up among the grass, they should carefully be cut up with a spaddle before they grow large; and this should be repeated two or three times in the summer, which will effectually destroy them; for, if these plants are suffered to ripen their seeds, they will be blown all over the ground; their seeds having down adhering to them, which assists their transportation; so that they are often carried by the wind to a great distance, and thereby become very troublesome weeds to the grass. For want of this care, how many pastures may be seen almost over-run with these weeds, especially the ragwort; when a small expence, if applied in time, would have intirely extirpated them! for a man may go over several acres of land in one day with a spaddle, and cut up the weeds just below the surface of the ground, turning their roots upwards; which if done in dry weather, they will soon decay; but this must always be performed before the plants come to have their seeds formed; because after
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that many sorts will live long enough to nourish their seeds after they are cut, so as to ripen them : and there will be a supply of weeds for some years after, which cannot be extirpated without a much greater expence.

The proper management of pasture land is the least understood of any part of agriculture : the farmers never have attended to this, being more inclined to the plough ; though the profit attending that has not of late years been so great as to encourage them in that part of husbandry : but these people never think of laying down land for pasture, to continue longer than three years ; at the end of which time they plow it up again, to sow it with grain.

GRASSHOPPER, in zoology, a species of the gryllus, frequent in pastures. See *Gryllus*.

GRATINGS, in ship-building, certain hatches or covers laid over the hatchways of a ship, and crossed with battens of wood, so as to let the light down between the decks of the ships. See *Hatches*.

GRAVE, in music, is applied to a sound of a low or deep tone.

GRAVE *Accent*, in grammar, a mark placed in this manner ['] over some vowel, and implies that the voice should be lowered in pronouncing that syllable.

GRAVEL, in natural history, a congeries of small pebbles, which being mixed with a stiff lome, makes lasting and elegant walks in our gardens. The month of March is the properest time for laying gravel ; for it is not prudent to do it sooner, or to lay walks in any of the winter-months before that time.

GRAVEL, in medicine, a very painful distemper arising from a gritty matter concreting into small stones in the kidneys and bladder. See *Stone*.

GRAVELLY *Land*, abounding with gravel and sand. The best manure of these lands is marl, or any stiff clay that will dissolve with the frost, cow-dung, chalk, mud, and half rotten straw from the dung-hill.

GRAVER, the name of a tool by which all the lines, scratches, and shades, are engraved on copper, &c.

GRAVITATION, in philosophy, the pressure which one body exerts upon another by reason of its gravity. See *Attraction*.

GRAVITY, the natural tendency which all bodies have towards a center. See *Attraction*.

GRAVITY, in mechanics, the tendency of bodies towards the center of the

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earth. Gravity is of two kinds, absolute, and relative, or specific.

Absolute GRAVITY is the whole force with which a body tends downwards, or towards the center of the earth, and is always equal to the quantity of matter the body contains, without any regard to its bulk ; so that the absolute gravity of a pound of wood is equal to that of a pound of iron.

Relative or *Specific* GRAVITY is the excess of gravity in one body above that of another of equal dimensions, and is always proportionable to the quantity of matter under that dimension. Thus a cubic inch of iron is heavier than a cubic inch of wood ; for the iron being more dense than the wood, contains a greater quantity of matter under the same bulk.

For the method of finding the specific gravities of bodies, see *Hydrostatical Balance*.

GRAVITY *of the Air*. See *Air*.

GREASE, in farriery, a swelling and gourdianness of the legs of a horse. This disease is generally the effects of a faulty blood, and happens mostly to horses of a gross constitution ; sometimes it is owing to carelessness in the persons that look after them, for want of keeping their limbs clean and dry ; but for the most part, horses that run late in the winter at grass are the most subject to it ; their blood by that means growing poor and dropical, exposes them first to swell in their limbs, and then to eruptions, which discharge a foetid stinking matter resembling melted glue, and when it turns sharp and corrosive, it becomes very troublesome. Sometimes the grease breaks out only behind, sometimes before ; and when the constitution is very bad, it will break out in all the four limbs at the same time.

When the heels are very much swelled and full of hard scabs, it is necessary to begin the cure with poultices, which may be made with either turneps or rye-flour, turpentine, and hogs lard, mixed with spirit of wine or red wine- lees ; and when the horse comes to move his limbs with less stiffness, it will be proper to purge him, which, in some cases, must be repeated five or six times, before you can obtain the desired effect. Where there are pretty large swellings in the limbs, diuretics that work powerfully by urine, often succeed better than purges.

GREAT, a term of comparison, applied to things of large or extraordinary dimensions, &c.

GREAT

GREAT *Circles of the Sphere*, such as divide the sphere into two equal parts or hemispheres, in contradiction to the lesser circles, which cut the sphere into unequal parts.

GREAT Circle Sailing. See *Sailing*.

GREEK, or **GRECIAN**, something relating to ancient Greece.

GREEK Church, that part of the Christian church established in Greece and other parts of Turkey.

GREEK Language, the language spoken by the ancient Greeks, and still preserved in the writings of Plato, Aristotle, Demosthenes, Thucydides, Xenophon, Homer, Hesiod, &c. The Greek language was that of a people who had a taste for the arts and sciences, which they happily cultivated; and hence it abounds with very significative terms, which are often borrowed by the moderns, and applied to any new discovery, instrument, machine, &c.

GREEK Orders, in architecture, are the Doric, Ionic, and Corinthian; the other two, namely the Tuscan and Composite, being called the Latin orders.

GREEN, one of the original colours of the rays of light.

GREEN, among painters and dyers, a colour produced by a mixture of yellow and blue, which will be either deeper or lighter in proportion to the quantity of yellow used in the composition.

GREEN-CLOTH, a board or court of justice, held in the counting-house of the king's household, composed of the lord-steward, and the officers under him, who sit daily, and take cognizance of matters of justice within the verge of the court, which extends about two hundred yards every way from the last gate of the palace where his majesty resides.

GREEN-FINCH, in ornithology, the English name of the greenish fringilla, having its wings and tail variegated with yellow. It is a very common bird with us, and something larger than the chaffinch.

GREENHOUSE, a conservatory, or house erected in a garden, for preserving such tender and exotic plants as cannot bear the cold of our winters, if exposed to the open air.

* **GREENLAND**, extends from the meridian of London to 50 degrees of west longitude, and from 60 to 80 degrees of north latitude, Cape Farewell being the most southerly point of land. The country is mostly all highland and mountains,

excessive cold and covered with snow all the year. It has little or no wood, except some few bushes, and not many plants or herbs; and consequently, there can be but few quadrupeds nourished here, the chief subsistence of the inhabitants being on fishing. The inhabitants know nothing of sowing nor planting, though the valleys between the mountains seem fit for the purpose. There are no animals but bears, foxes, rein-deer, and dogs. There are a multitude of fishes on the coast, particularly whales, sea-unicorns, seals, and dog-fish. Of the sea-unicorn's horn they make swords and heads for their darts and arrows. The fish itself is as large as an ox, strong, swift, and hard to be caught. They have likewise a great number of birds, which the natives are very dextrous in catching, with snares and springs, and they make great use of the skins and feathers. The inhabitants are generally of a low stature, with black hair, flat noses, broad faces, and lips turned up. Their complexion is of the colour of a ripe olive, or a dark brown. The women stain their faces with blue and black streaks, let into the skin by pricking it with a sharp bone. They resemble the Samoids and Laplanders, and are very active and strong. They are sometimes so desperate, that rather than be taken they will throw themselves down the rocks and mountains. In the winter they retire from the sea-side to the warm valleys, where they have houses and villages, dug in the earth, and round, like an oven. In the fishing time they remove from place to place, in their large boats. These consist of four poles, covered with skins, which serve them well enough in the summer. The things they value most are knives, small pieces of iron, looking glass, &c. for which they exchange their bows and arrows, their boats, and even their very cloaths off their back. Their cloaths are made of bird-skins, seal-skins, and the like, with the feathers and hair upon them. They wear the hair side outwards in the summer, and inwards in the winter, at which time they have two or three suits, one upon another.

GREGARIOUS, an epithet applied to such animals as live together in flocks or herds.

GREGORIAN Calendar. See *Calendar*.

GREGORIAN Year. See *Year*.

* **GRESHAM** (Sir THOMAS) founder of the Royal Exchange, and of Gresham-college, (which is now destroyed, and the

Excise-

Excise-office built on the same spot,) was the son of sir Richard Gretham, a wealthy merchant, and was born at London, in 1519. While very young, he was bound apprentice to a merchant; after which he was sent to Caius college, then Glonvill-hall, in Cambridge, where he made such improvements in learning, that Dr. Caius, the founder of the college, styles him *Doctissimus Mercator*, or the very Learned Merchant. He then engaged in trade, and, in 1543, became a member of the mercers company. He soon after married, and his father dying, succeeded him in the office of agent to king Edward for taking up money of the merchants of Antwerp, and, in 1551, removed with his family to that city, where by his management and advice, he increased the trade of England, discharged his majesty's debts, and, by the advantageous turn he gave to the exchange in favour of England, the price of all foreign commodities was sunk, and the gold and silver which had before been exported in large quantities, were most plentifully brought back again. Yet upon the accession of queen Mary, he was removed from his agency; but presenting to the ministry a memorial of his services to the late king, he was soon after reinstated in his former posts, and on queen Mary's decease, he was immediately employed by queen Elizabeth to buy up arms. Her majesty, in 1559, conferred upon him the honour of knighthood, and appointed him her agent in foreign parts.

Sir Thomas's father, while sheriff of London, had applied to king Henry VIII. to enable him to purchase houses, in order to build a bourie for their reception; but without effect. Sir Thomas now resumed his father's design; the citizens purchased eighty houses in Cornhill, and cleared the ground, after which sir Thomas, at his own expence, built on that spot the bourie, as it was then called, on the same plan as that of Antwerp. It was fully completed in 1569; and, on the 29th of January following, queen Elizabeth, attended by the nobility, came from Somerset-house to sir Thomas's in Bishopsgate-street, where having dined with him, she went to view the bourie, and having examined every part of it, caused it to be proclaimed by a trumpet and herald, the Royal Exchange. Sir Thomas had purchased large estates in several counties, and being at length desirous of having a country seat near London, he bought Otterly Park, near Brentford,

in Middlesex, within which he built a large and magnificent seat. Here queen Elizabeth being once lodged and entertained with great splendor, found fault with the court before it, as being too large, observing, that it would appear better, if divided by a wall in the middle, when taking the hint, he, in order to shew his respect to her majesty, immediately sent for workmen from London, who built up the wall with such privacy and expedition, that the next morning the queen, to her great surprise, found the court divided in the manner she had proposed the day before. Before this seat was completed, he formed and executed the design of converting his mansion-house, near Bishopsgate-street, into a seat for the Muses. For this purpose, he gave one moiety of the Royal Exchange to the mayor and commonalty of London, and the other to the mercers company for the salaries of seven lecturers in divinity, law, physic, astronomy, geometry, music, and rhetoric, at fifty pounds per annum for each, with his house in Bishopsgate-street, for the residence of the lecturers, and the reading of the lectures. Having settled his affairs, he was at leisure to reap the fruits of his industry and success; but his enjoyment of this felicity was of short duration; for, on the evening of the 21st of November, in 1579, he suddenly fell down in his own house, and being taken up speechless, soon expired. By his death, several estates, to the clear yearly value of 2300l. fell to his lady, who survived him many years.

* GREY (lady JANE) an illustrious personage, was of royal blood by both parents; her grandmother on the side of her father Henry Grey, duke of Suffolk, being queen consort to Edward VI. and her grandmother, on the side of lady Francis Brandon, her mother, being daughter to Henry VII. queen dowager of France, and the mother of Mary queen of Scots. Lady Jane was born in 1537, and gave early proofs of the most astonishing abilities. Her genius appeared in every thing she undertook. Her father had two chaplains, Harding and Aylmer, both men of distinguished learning, whom he employed as her tutors; and she made such proficiency under their instructions as amazed them both. She not only spoke and wrote her own language with extraordinary accuracy, but the French, Italian, Latin, and especially Greek, were as natural to her as her own; she was also versed in Hebrew, Chaldee, and Arabic.

She had likewise a sedateness of temper, and quickness of apprehension, and a solidity of judgment, and yet was possessed of the greatest mildness, humility, and modesty. Upon the decline of the king's health, in 1553, the dukes of Suffolk and Northumberland began to think of preventing the reverse of fortune, which they foresaw would take place on Edward's death, by changing the succession of the crown, and transferring it into their own families. Here the excellent and amiable qualities of the lady Jane, joined to her near affinity to the king, subjected her to be the chief tool of their ambition. On this account, she was married to the lord Guilford Dudley, the duke of Northumberland's fourth son, without acquainting her with the real design of the match, which was celebrated with great pomp, in the latter end of May. In a few days after this king Edward grew so weak, that Northumberland thinking it high time to carry his project into execution, broke the affair to the young monarch, and having made the most plausible objections to his majesty's two sisters, persuaded him to set aside all partialities of blood in favour of the lady Jane; and a deed of settlement being drawn up by the judges, was with great secrecy signed by his majesty, and all the lords of the council. Northumberland then directed letters to the lady Mary, in her brother's name, requiring her attendance at court; but when she was within half a day's journey of Greenwich, the king died there, on the 6th of July, 1553, and having timely notice of it, she escaped the snare that had been laid for her. At length every previous step being taken, the dukes of Norfolk and Suffolk repaired to Durham-house, where the lady Jane resided with her husband; and there the duke of Suffolk, with much solemnity, told his daughter, that the late king had left his crown to her, by the consent of the privy council, and that the magistrates and citizens of London approved what had been done. Then both he and Northumberland kneeling, paid their homage to her as queen of England. The poor lady astonished, without being moved by their reasons, or elevated by such unexpected honour, observed the dangers with which her wearing of the crown would be attended, and concluded with saying, "I will not exchange my peace for honourable jealousies, for magnificent and glorious fetters. And if you love me sincerely,

"you would rather with me a secure and quiet, though mean fortune, than an exalted condition, exposed to the wind, and followed by a dismal fall." However, she was at length prevailed upon to yield an unwilling assent, and with a heavy heart she suffered herself to be conveyed by water to the Tower, which she entered with all the state of a queen, attended by the principal nobility, and her mother, the duchess of Suffolk, supporting her train. About six in the afternoon she was proclaimed, and the same day assuming the regal title, proceeded afterwards to exercise many acts of sovereignty. Mary, however, was no sooner proclaimed, than the duke of Suffolk, who then resided with his daughter in the Tower, went to her apartment, and in the softest terms told her, that she must lay aside the dignity of a queen; to which, with a serene countenance, she answered, that she received this message with greater satisfaction than her former advancement to royalty; that by her obedience she had sinned and offered violence to herself, and now willingly resigned the crown.

Thus ended the reign, but not the misfortunes of this unhappy lady. She was sent to the Tower, and saw her husband's father, with all his family, and many of the nobility and gentry, brought thither, for supporting the claim she did not approve. Before the end of the month she saw the duke of Suffolk, her own father, in the same circumstances with herself; but her mother not only remained exempt from punishment, but had such interest with the queen, as, on the last day of the month, to procure the duke's liberty. On the 3d of November, 1553, the lady Jane, and the lord Guilford Dudley, her husband, were carried from the Tower to Guildhall, where, being tried and convicted of high treason, they had sentence of death passed upon them. However, in December, the strictness of their confinement was mitigated by their being permitted to take the air in the queen's garden, and other little indulgences, which might give them some gleam of hope; but her father being engaged in Wyatt's rebellion, the ministers persuaded the queen, that she could not be safe, while lady Jane and her husband were alive; and it was not without much difficulty that Mary was brought to take them off. The 9th of February was the day fixed for her death; the bitterness of it was passed, and she was prepared to meet her fate.

fate, when Dr. Feckenham, abbot of Westminster, came to her from the queen, who was very desirous that she should die a papist. The lady received him with much civility, and with such calmness and sweetness of temper, that he could not help being moved at her situation, and therefore procured a respite of her execution till the twelfth. But when he acquainted her with it, she told him, That far from desiring her death might be delayed, she expected and wished for it as the period of her miseries, and her entrance into eternal happiness. On Sunday evening, which was the last she was to spend in the world, it is said she wrote a letter in the Greek tongue, on the blank leaves at the end of the New Testament, in the same language, which she bequeathed as a legacy to her sister, the lady Catharine Grey. The next morning the lord Guilford earnestly desiring the officers to allow him to take his last farewell of her, they consented; but upon notice, she sent him word, that such a meeting would rather add to his afflictions, than confirm that tranquillity which had prepared their souls for the stroke of death, advising him to remit the interview to the other world, where friendships were happy, and unions indissoluble. All she could do was to give him a farewell out of a window, as he passed to his scaffold on Tower-hill, where he suffered with much Christian meekness. She also beheld his dead body wrapped in linen, as it was brought back under her window to the chapel. The lieutenant led this noble and excellent lady about an hour after to a scaffold opposite the White-tower, where she was attended by Feckenham, but without paying any regard to his discourses, she kept her eyes fixed on a book of prayers she held in her hand. After a short recollection, she saluted those who were present with a composed countenance: then addressing herself to Dr. Feckenham, she said, "God will abundantly requite you, good Sir, for your humanity to me, though your discourses gave me more uneasiness than all the terrors of my approaching death." She then made a plain and short speech to the spectators; after which, kneeling, she repeated the *Misere* in English. Then rising, she gave her two women her gloves and handkerchief, and her Prayer Book to the lieutenant of the Tower. In untying her gown the executioner offered to assist her, but she desired him to let her alone; and turning to her women, they undressed and gave her a handkerchief to bind over

her eyes. The executioner then kneeling desired her pardon, to which she answered, "Most willingly." In short, the handkerchief being bound close over her eyes, she began to feel for the block, and being guided to it by one of the spectators, she stretched herself forward, and crying, "Lord, into thy hands I commend my spirit;" her head was instantly separated from her body at one stroke.

GRIFFON, in heraldry, an imaginary animal, supposed by the ancients to be half eagle and half lion.

GRINDING, *Trituratio*, the reducing hard substances to fine powders, by means of mills, rubbing them in a mortar, or with a miller on a marble.

GRIPING, in the sea-language, the inclination of a ship to run to the windward of her course, when she steers with a wind on either quarter. This is partly occasioned by the shock of the waves which strike her on the weather-quarter, but chiefly by the arrangement of the sails, which dispose her at such a time to edge continually to windward.

GRIST, in country affairs, corn already ground, or ready for grinding.

GROGRAM, among manufacturers, a kind of stuff composed of silk and mohair.

GROIN, *Pubes*, in anatomy. See *Pubes*.

GROOM, a name applied to several superior officers belonging to the king's household.

GROOM is more particularly used for a servant appointed to attend horses in the stable.

GROOVE, among miners, the shaft or pit sunk into the earth, whether in the vein or not.

GROOVE, among joiners, the channel made by their plough in the edge of a moulding, &c.

GROSS-WEIGHT, among merchants, the whole weight of any commodity, including the dust, dross, and bag, chest, &c. in which it is contained.

GROSSULARIA, the gooseberry and currant-bushes.

GROTESQUE, something whimsical, extravagant, and monstrous.

GROTTO, in natural history, a large deep cavern in some rock or mountain.

GROTTO, a small artificial edifice made in a garden, in imitation of a natural grotto.

The outsides of these grottos are usually adorned with rustic architecture, and their inside with shell-work, coral, &c. and also furnished with various fountains, and other ornaments.

A grotto may be built with a little expence of glass, cinders, pebbles, pieces of large flints, shells, moss, stones, counterfeited coral, pieces of chalk, &c. all bound or cemented together with a proper cement.

GROVE, in gardening, a small wood impervious to the rays of the sun.

GROUND, in painting, the surface upon which the figures and other objects are represented. The ground is properly understood of such parts of the piece as have nothing painted on them, but retain the original colours upon which the other colours are applied to make the representations.

A building is said to serve as a ground to a figure, when the figure is painted on the building.

The ground behind a picture in miniature is commonly blue or crimson, imitating a curtain of satin or velvet.

GROUND-IVY, *hedera terrestris*, in botany. See *Hedera Terrestris*.

GROUND-PINE, in botany. See *Champtys*.

GROUND-WORK, among builders. See *Foundation*.

GROUNDING, in the sea-language, a ship is said to ground when she strikes and rests upon the ground.

GROUNDSEL, in botany. See *Eryeron*.

GROUP, in painting and sculpture, an assemblage of figures, of men, beasts, fruits, &c. which have some apparent resemblance to one another.

It is necessary, in a good piece of painting, that all the figures be divided into groups: this has somewhat in it of the nature of symphony or concert of voices; for as in the one the voices must sustain each other, in order to fill the ear with an agreeable harmony from the whole; so in groups, if the parts or figures are not well disposed, something will be found disagreeable.

GROUSE, or GROWSE, the name of a very valuable bird, of the size of a full grown fowl. Its head is large, and adorned with a very beautiful scarlet protuberance over the eyes, which are remarkably piercing. It is a native of England, though not very common, and lives on large mountainous heaths.

GRUB, the English name of the hexapode worms, or maggots, hatched from the eggs of beetles.

Grubs are an excellent bait for many kinds of fish. In angling for the grayl-

ing, the ash-grub is to be preferred to all others. This is plump, milk-white, but round from head to tail, and has a red head. There is also another grub, which is very common, and is longer and slenderer than the ash grub. It is yellower and tougher, and is known by having a red head, and two rows of legs along the belly. The trout and grayling usually frequent the same places, and it is not uncommon to take the trout, while fishing for the other. These grubs are to be kept in bran, in which they will grow tougher than they were at first; but the ash-grub is always so tender, that it is difficult to make a good bait of it.

GRUBBING, a term used by our farmers to signify the taking up the roots of trees. Several occasions offer for the doing this; as when trees are old and past growing to any use, the roots must be taken up, that young trees may be planted in their places. This is a chargeable operation in most places, but, in some countries, the farmers have devised a machine, which does a great part of the work in a much shorter time than in any other way can be done. It is a hook of iron, of about two feet and a half long, with a large iron ring fastened to its straight end or handle. *Mortimer's Husbandry*.

GRUME, *Grumus*, in medicine, implies a concreted clot of blood, milk, or other similar substance.

GRYLLOTALPA, the mole cricket, in natural history, a creature approaching to the locust kind, and very properly called by this name by Moffet, as it has much of the form of the cricket, and makes a noise like it in the evening; and is, like the mole, continually employed in digging the ground. It is an insect of a very unpleasant form, and is principally found in damp, and boggy places.

GRILLUS, in zoology, the name of the cricket and locust kind, which, together with the grasshopper, form one genus of insects.

GUAIAIACUM, in the materia medica, the wood of two kinds of trees growing in America, the one called *guaiacum Jamaicense*, &c. the other *euonymo adfinitis occidentalis*, &c. an occidental nut-bearing tree, allied to the euonymus or spindle-tree, with winged leaves, like those of butcher's broom, and a fungous bark at the joints. The wood comes over in large pieces, weighing four, five, and more hundred weight, from Jamaica, Mexico, Porto-rico, Boriquen, St. Domingo, and other

Other parts of the West-Indies : the tree has been raised also in Europe, but proved far inferior in quality to that produced in its native climate, and yielded nothing of the resinous juice, which it plentifully bleeds there.

The wood, on account of its great hardness, solidity, and indisposition to crack, is employed by the turners and others for several of the more curious mechanic uses. In Holland, at Hamburg, and other places of large commerce, it is rasped in work-houses established for that purpose, after the same manner as the colouring-woods ; and from these the druggist and apothecary are supplied.

A strong decoction of guaiacum is used as an alterative diet-drink in venereal, cancerous, and other disorders from an impurity of the blood and juices. Hoffman recommends the spirituous extract (which is the most active preparation) as a high antidote against the venereal poisons, provided it be used properly, according to the laws of medicine. *Neumann's Chemistry*.

Gum-GUAIACUM, so called, a resin exuding from the guaiacum tree. It is of a brown colour, partly reddish, and often greenish, brittle, of a glossy surface when broke, of a pungent taste ; and when rubbed or heated, of a not disagreeable smell : its smoke, in burning, has somewhat the smell of that of wood. Such should be chosen as has pieces of the bark adhering, and easily parts from them by a few quick blows.

Its virtues are the same with those of the wood. It is used pretty frequently in England, very rarely in Germany, the pure resin artificially extracted from the wood, by means of spirit of wine, advantageously and elegantly supplying its place. *Neumann's Chemistry*.

GUAJAVA, or *GUAVA*, in botany, the name by which Tournefort calls the *Psidium* of Linnæus. See *Psidium*.

GUANABANUS, the custard apple, in botany.

All these plants, which are natives of the warm parts of America, are too tender to live in this country, if they are not preserved in warm stoves : they come up very easily from the seeds which are brought from America, if they are fresh : but the seeds must be sown on a good hot bed, or in pots of light earth, and plunged into an hot bed of tanners bark. If the plants are carefully managed, their leaves will continue green all the winter,

and make a very good appearance in the stove of that season.

There are some of these plants in England, which are upwards of twelve feet high, and have produced flowers ; so that they may probably produce fruit here. As these plants advance in their growth, so they become more hardy, and should have a greater share of air admitted to them, especially in the summer : but there should be great care taken, not to let them remain in the bark bed too long unre-moved ; because they are very apt to root through the holes of the pots into the tan ; and then these roots will be torn off, whenever the pots are removed, and the plants seldom survive this ; and when they do, it is generally a long time before they perfectly recover their former vigour. These plants, when young, will require to be kept in the same degree of warmth with ananas ; but as they get more strength, so they will thrive with less warmth. *Miller's Gard. Dict.*

GUARANTY, in policy, the engagement of neutral kingdoms or states, whereby they undertake that certain treaties shall be inviolably observed.

GUARD, in a general sense, signifies the defence or preservation of any thing ; the act of observing what passes, in order to prevent surprize ; or the care, precaution, and attention we make use of, to prevent any thing happening contrary to our intention or inclinations.

GUARD, in the military, art, a duty performed by a body of men, to secure an army or place from being surprized by an enemy.

In a garrison the guards are relieved every day, and it comes to every soldier's turn once in three days ; so that they have two nights in bed, and one upon guard.

To be upon guard, to mount the guard, to dismount the guard, to relieve the guard, to change the guard, the officer of the guard, or the serjeant of the guard, are words often used, and well understood.

Advanced-GUARD, a party of either horse or foot, that marches before a more considerable body, to give notice of any approaching danger.

When an army is upon the march, the grand guards which should mount that day, serve as an advanced-guard to the army : in small parties, six or eight horse are sufficient, and these are not to go above four or five hundred yards before the party.

An advanced-guard is also a small body of twelve or sixteen horse, under a corporal or quarter-master, posted before the grand-guard of a camp.

Artillery-GUARD, a detachment from the army to secure the artillery; their corps de garde is in the front, and their centries round the part. This is a forty-eight hours guard: and upon a march, they go in the front and rear of the artillery, and must be sure to leave nothing behind: if a gun or waggon break down, the captain is to leave a part of his guard to assist the gunners and matrosses in getting it up again.

Corps de GARDE, soldiers entrusted with the guard of a post, under the command of one or more officers.

Forrage-GUARD, a detachment sent out to secure the forragers, which are posted at all places, where either the enemy's party may come to disturb the forragers; or where they may be spread too near the enemy, so as to be in danger of being taken. They consist both of horse and foot, and must stay at their posts till the forragers all come off the ground.

Grand-GUARD, three or four squadrons of horse, commanded by a field-officer, posted at about a mile and a half from the camp, on the right and left wings, towards the enemy, for the security of the camp.

Main-GUARD, that from whence all the other guards are detached.

Picquet-GUARD, a good number of horse and foot always in readiness in case of an alarm: the horse are all the time saddled, and the riders booted. The foot draw up at the head of the battalion, at the beating of the tattoo; but afterwards return to their tents, where they hold themselves in readiness to march, upon any sudden alarm. This guard is to make resistance, in case of an attack, till the army can get ready.

Quarter-GUARD, a small guard, commanded by a subaltern officer, posted by each battalion, about an hundred yards before the front of the regiment.

Rear-GUARD, that part of the army which brings up the rear, which is generally the old grand-guards of the camp. The rear-guard of a party is six or eight horse, that march about four or five hundred paces behind the party. The advanced-guard of a party on its going out, make the rear-guard on its return.

Standard-GUARD, a small guard, under a corporal, out of each regiment of

horse, and placed on foot, in the front of each regiment.

Van-GUARD, that part of the army which marches in the front.

GUARDS also imply the troops kept to guard the king's person.

Yeomen of the GUARDS. See *Yeomen*.

GUARD, in fencing, implies a posture proper to defend the body from the sword of the antagonist.

GUARD-SHIP, a vessel of war appointed to superintend the marine affairs in a harbour or river, and see that the ships who are not commissioned have their proper watch kept duly every night; also to receive and secure seamen who are impressed in the time of war.

GUARDIAN, in law, a person who has the charge or custody of such person or persons as have not sufficient discretion to take care of themselves; as idiots, or children under age.

* *GUASTALLA*, battle of, June 19, 1734. The Imperial forces retreated to Reggio, and from thence removed to the plains of Carpi, on the right of Secchia, where they received some reinforcements; then general count Königsegg arriving in the camp, took upon himself the command of the army. His first step was to take post at Quingentolo, by which motion he secured Mirandola, that was threatened with a siege. On the fifteenth of February, he forded the river Secchia, and surprized the quarter of marechal de Broglio, who escaped in his shirt with great difficulty. The French retired with such precipitation, that they left all their baggage behind, and above two thousand were taken prisoners. They posted themselves under Guastalla, where, on the nineteenth day of the month, they were vigorously attacked by the Imperialists, and a general engagement ensued. Königsegg made several attempts to break the French cavalry, upon which, however, he could make no impression. The infantry on both sides fought with uncommon ardour for six hours, and the field was covered with carnage. At length the Imperial general retreated to Lazara, after having lost above five thousand men, including the prince of Wirtemberg, the generals Valpareze and Colminero, with many other officers of distinction: nor was the damage sustained by the French greatly inferior to that of the Germans, who repassed the Po and took post on the banks of the Oglio. The allies crossed the same river, and the mar-

quis de Maillebois was sent with a detachment to attack Miranda; but the Imperialists marching to the relief of the place, compelled him to abandon the enterprise: then he rejoined his army, which retired under the walls of Cremona, to wait for succours from Don Carlos. So little respect did the French court pay to the British nation, at this juncture, that in the month of November, an edict was published in Paris, commanding all the British subjects in France, who were not actually in employment, from the age of eighteen to fifty, to quit the kingdom in fifteen days, or enlist in some of the Irish regiments, on pain of being treated as vagabonds, and sent to the galleys. This edict was executed with the utmost rigour. The prisons of Paris were crowded with the subjects of Great Britain, who were surprized and cut off from all communication with their friends, and must have perished by cold and hunger, had they not been relieved by the active charity of the Jansenists. The earl of Waldegrave, who then resided at Paris, as ambassador from the king of Great Britain, made such vigorous remonstrances to the French ministry, upon this unheard-of outrage, against a nation with which they had been so long in alliance, that they thought proper to set the prisoners at liberty, and published another edict, by which the meaning of the former was explained away.

GUAZUMA, bastard cedar-tree, in botany, a genus of trees, whose characters are:

It hath a regular flower consisting of five leaves, which are hollowed like a spoon at their base; but at their tops are divided into two parts, like a fork; the flower cup consists of three leaves, from whence arises the pointal, which afterwards becomes a roundish warted fruit, which has five cells inclosing many seeds. These plants may be propagated by seed, which should be sown early in the spring, in small pots filled with fresh light earth, and plunged into a hot-bed of tanners bark. These plants being very tender, they must constantly remain in the stoves, giving them a good share of fresh air in the summer; but in winter, they must be kept very warm, otherwise they will not live in this country; but if they are carefully managed, they will thrive very well, and afford an agreeable variety in the stove, amongst other tender exotic plants of the same countries. *Miller's Gard. Dict.*

GUIDON, the name of a sort of standard carried by the king's life guards; so called from its being broad at one extreme, and almost pointed at the other, and slit, or divided into two.

GUIDON also implies the officer who carries the guidon.

GUILD, or **GILD**, a Saxon word signifying a company or fraternity.

GUILDHALL, the chief hall of a city or corporation where the courts are held.

***GUINEA**, a country of Africa, running along the coast, which is the only part that is known to Europeans. It is divided into three parts, one of which is near the rivers Senegal and Gambia, which is called North Guinea; another near the equator, called Upper Guinea; and a third beyond the equator, called Lower Guinea, or Congo. But it is more commonly divided into the Malagueta Coast, the Tooth Coast, the Gold Coast, and the kingdoms of Whidah, and Great Arden. The air is exceeding hot, and very unhealthy, and their seasons are the rainy and the dry season. The dry, or summer, season begins in September, and continues till March or April, and then the rainy season, or winter begins, which also continues six months. In the dry season the nights are cool, and temper the excessive heats of the day. The soil is fertile, and produces rice, Indian corn, millet, barley, Guinea pepper, sugar-canes, and several sorts of excellent fruit. Its trade consists in gold dust, wax, gum seneca, mats, hides, elephants teeth, and slaves. There are mines of gold, different kinds of animals, and uncommon birds. The sheep of this country have hair instead of wool. The Europeans carry on a great trade here, especially the English, Dutch, and French, who have forts and factories on this coast. The Dutch drove the Portuguese entirely from thence, after they had possessed the whole coast for a hundred years and upwards. The natives are all black, with woolly heads, flat noses, and thick lips, and they go almost naked, both men and women, from one end of the coast to the other. There are abundance of little territories and states, whose governors are titled kings by the sailors who frequent the coast. Those who live near the sea are continually at war with the inland country, in order to take prisoners, which they sell to the Europeans for slaves. Others purchase men and women in distant countries for the same purpose, or steal them

G U M

them and bring them down to the coast to make money of them. Many will sell their nearest relations if they have an opportunity; and it is common for many of them, even the kings themselves, to sell their wives upon the least disgust. Many ships from London, Bristol, and Liverpool, are continually employed in the slave trade; but though it may be a lucrative trade, it is such as a man of nice feelings could never engage in.

GUINEA-PIG, in zoology, a quadruped of the rat kind, with a variegated body, resembling in some measure that of a young pig.

GUITAR, a musical instrument of the stringed kind.

GULA, or **GOLA**, in architecture, the same with cymatium, or ogee.

GULES, in heraldry, the true scarlet colour, and expressed in engraving by lines falling perpendicular from the top of the escutcheon to the bottom.

GULPH, in geography, a part of the sea almost surrounded by the land.

GUM, in pharmacy, a concreted vegetable juice, which transudes through the bark of certain trees, and hardens upon the surface.

The chemists allow only those to be properly gums, which are dissolvable in water; those which are only dissolvable in spirits, they call resins; and those of a middle nature, gum resins.

The reader will find an account of the various substances, many of which are improperly filed gums, under *Arabic*, *Serena*, *Tragacanth*, *Ammoniacum*, *Anise*, *Guaiacum*, *Lacca*.

GUM, among gardeners, a kind of gangrene incident to fruit-trees of the stone-kind, arising from a corruption of the sap, which, by its viscosity, not being able to make its way through the fibres of the tree, is, by the protrusion of other juice, made to extravasate and ouze out upon the bark.

When the distemper surrounds the branch, it admits of no remedy; but when only on one part of a bough, it should be taken off to the quick, and some cow-dung applied to the wound, covered over with a linen-cloth, and tied down. *M. Quintinie* directs to cut off the morbid branch two or three inches below the part affected.

GUMS, *Gingivæ*, in anatomy. See *Gingivæ*.

GUM-BOILS, a morbid affection of the gums, called by the writers of surgery parulis. These are of different degrees, and usually arise from pains in the teeth.

G U N

They are to be treated by discutients as other inflammatory tumours; but if these fail, or the disorder is neglected, it usually terminates in an abscess or fistula. Sage, camomile, and elder flowers, boiled in milk and water, make a good gargarism to be held in the mouth, and the remaining herbs may be sewed up in a bag to be kept hot to the cheek. A half roasted fig is a very good internal application, and, when the softness of the tumour shews that the matter is suppurated, it ought immediately to be opened with a lancet, to prevent the matters lodging there, and eroding the bone, and producing a fistula or caries. After it is opened, the matter should be gently pressed out with the fingers, and the mouth frequently washed with red wine mixed with a decoction of vulnerary herbs till it is well. When the ulcer has penetrated deep, it will be necessary to inject the same liquors with a syringe, and compress the part by a proper external bandage, to make the bottom part heal first; and, when it is already become fistulous, and has callous hedges, it may then often be cured by injecting the tincture of myrrh, and elixir proprietatis, continuing this for some time. If all these prove ineffectual, the fistula must be laid open by incision, and the caries removed by medicines, caustics, or the actual cautery. If this proceeds, as sometimes it does, from a carious tooth, this is first to be drawn before any thing else can be done; and it is a good rule in these cases always to be rather too soon than too late in laying them open. *Heister's Surg.*

GUN, a fire arm, or weapon of offence, which forcibly discharges a ball, shot, or other offensive matter, through a cylindrical barrel, by means of gun-powder.

Gun is a general name, under which are included divers or even most species of fire-arms. They may be divided into great and small.

Great guns, called also by the general name cannons, make what we call ordnance, or artillery; under which come the several sorts of cannon, as cannon-royal, demi-cannon, &c. Culverins, demi-culverins, sakers, minions, falcons, &c.

Small guns include musquets, musquetons, carabines, blunderbusses, fowling-pieces, &c.

Pistols and mortars are almost the only sort of regular weapons, charged with gun-powder, that are excepted from the denomination of guns.

GUN

G U N

GUN is also a name given by the miners to an instrument used in cleaving rocks with gun-powder.

GUNNEL, in ship-building, the upper-part of a ship's side.

GUNNER, an officer appointed for the service of the artillery; or a person skilled in the art of gunnery.

GUNNER of a Ship of War, an officer appointed to take charge of the artillery and ammunition; and to teach the men the exercise of great guns.

GUNNERY, the art of determining the motion of bodies shot from mortars, cannon, &c.

The late ingenious Mr. Robins having concluded, from the experiments related in his *New Principles of Gunnery*, that the force of fired gun-powder, at the instant of its explosion, is the same with that of an elastic fluid of a thousand times the density of common air, and that the elasticity of this fluid, like that of air, is proportional to its density, proposes the following problem:

The dimensions of any piece of artillery, the weight of its ball, and the quantity of its charge, being given; to determine the velocity which the ball will acquire from the explosion; supposing the elasticity or force of the powder at the first instant of its firing to be given.

In the solution of this important problem, he assumes the two following principles: 1. That the action of the powder on the bullet ceases as soon as the bullet is got out of the piece. 2. That all the powder of the charge is fired, and converted into an elastic fluid, before the bullet is sensibly moved from its place.

These assumptions, and the conclusions above mentioned, make the action of fired gun-powder to be entirely similar to that of air condensed a thousand times; and from thence it will not be difficult to determine the velocity of the ball arising from the explosion.

Mr. Robins has also given us an ingenious way of determining, by experiments, the velocity which any ball moves with at any distance of the piece it is discharged from.

This may be effected by means of a pendulum made of iron, having a broad part at bottom, covered with a thick piece of wood, which is fastened to the iron by screws: then having three poles joined together by their tops, and spreading at bottom, such as are vulgarly used in weighing and lifting heavy bodies, and

G U N

called by workmen triangles; on two of these poles, towards their tops, are screwed on sockets, on which the pendulum is hung by means of a cross piece, which becomes its axis of suspension, and on which it ought to vibrate with great freedom. Something lower than the bottom of the pendulum there should be a brace, joining the two poles to which the pendulum is suspended; and to this brace there is fastened a contrivance made with two edges of steel, something in the manner of a drawing-pen; the strength with which these edges press on each other being diminished or increased at pleasure, by means of a screw. To the bottom of the pendulum should be fastened a narrow ribbon, which, passing between the steel edges, may hang loosely down by means of an opening cut in the lower piece of steel.

The instrument being thus fitted, if the weight of the pendulum, the respective distances of its center of gravity, and of its center of oscillation, from its axis of suspension, be known, it may from thence be found, what motion will be communicated to this pendulum by the percussion of a body of a known weight moving with a known degree of velocity, and striking it in a given point; that is, if the pendulum be supposed at rest before the percussion, it will be known what vibration it ought to make in consequence of such a blow; and if the pendulum, being at rest, is struck by a body of a known weight, and the vibration which the pendulum makes after the blow is known, the velocity of the striking body may from thence be determined.

GUN-POWDER, a composition of salt-petre, sulphur, and charcoal, well mixed together and granulated; which easily takes fire, and expands with amazing force. The invention of this composition is ascribed by Polydore Virgil to a chemist, who having accidentally put the ingredients above mentioned into a mortar, and covered it over with a stone, it happened to take fire, and threw off the stone. Thevet says that this chemist was one Constantine Anelzen, a monk of Friburg; but Belleforet and others assert it to be Bertholdus Schwartz: at least it is affirmed that he first taught the use of gun-powder to the Venetians, in the year 1380. Peter Mexia however contradicts this account, by shewing it to have been used by Alphonfus XI. king of Castile, in the year 1342. Ducange adds, that there is men-

tion made of this powder in the registers of the chambers of accounts of France, so early as the year 1338; and our countryman, Friar Bacon, expressly mentions the composition, in his treatise *De nullitate Magiæ*, published at Oxford in the year 1216.

Method of making GUN-POWDER. The following receipt for making gun-powder is taken from Dr. Shaw's Chemical Lectures.

Take four ounces of refined salt-petre, an ounce of brimstone, and six drams of charcoal; reduce these to a fine powder, and continue beating them for some time in a stone mortar, with a wooden pestle, wetting the mixture between whiles with water, so as to form the whole into an uniform paste, which is reduced to grains, by passing it through a white sieve for the purpose; and in this form, being carefully dried, it becomes the common gun-powder.

For greater quantities, mills are usually provided, by means of which more work may be performed in one day than a man can do in a hundred. See *Mill*.

Different kinds of GUN-POWDER. The three ingredients of gun-powder are mixed in various proportions, according as the powder is intended for musquets, great guns, or mortars; though these proportions seem not to be perfectly adjusted, or settled by competent experience.

To increase the strength of powder, Dr. Shaw thinks it proper to make the grains considerably large, and to have it well sifted from small dust. We see that gun-powder, reduced to dust, has little explosive force; but when the grains are large, the flame of one grain has a ready passage to another, so that the whole parcel may thus take fire nearly at the same time, otherwise much force may be lost, or many of the grains go away as shot unfired.

* GUN-POWDER Plot was discovered November 5, 1605.

GUN-SHOT-WOUNDS, those made by shot, bullets, &c. shot from some species of fire-arms.

These wounds are attended with much worse consequences than wounds made with cutting instruments; for the parts are more shattered and torn, especially when the shot falls upon the joints, bones, or any considerable part. Wounds of this kind have an eschar formed upon them, and are therefore attended with little or no hæmorrhage at first, unless some very considerable vessel happens to be wounded;

but as soon as this eschar falls off, the hæmorrhage is sometimes so violent, as to endanger the life of the patient, unless the immediate assistance of a surgeon can be procured.

There being for the five or six first days little or no discharge of matter from these wounds, it is no wonder that gun-shot-wounds exceed all others in the violence of their symptoms, such as inflammation, pain, gangrene, &c.

The eschar formed upon these wounds is not occasioned so much by the heat of the bullets, as by the rapidity with which they destroy the parts; and the violence of the symptoms is chiefly owing to this manner of wounding. Nor is there any thing poisonous in these wounds, as some have imagined; for nothing poisonous enters the composition of either the powder or the ball.

Gun-shot-wounds are some deeper than others; in some the muscular parts alone are hurt; in others the vessels, bones, or viscera, are wounded. Sometimes the ball passes clear through; sometimes it remains fixed in the wound, and often carries part of the wadding; or the patient's clothes with it. From the difference of these circumstances very different symptoms must arise.

Gun-shot-wounds in the cranium, even the slightest of them, are attended with very great danger; and frequently bring on terrible symptoms, from the concussion they occasion in the internal parts; so that it is surprizing to see how small an external wound upon this part, will bring on death, if not prevented by the trepan. Internal wounds of this sort are also extremely dangerous; but, unless some large vessel be wounded, they are frequently cured.

When they are inflicted on the bones or joints, they are attended with very bad symptoms; for in this case it is next to impossible to escape inflammation, gangrene, caries, and dangerous fistulæ, which either require amputation of the limb, or leave it without sense or motion.

If any part of the clothes, wadding, or any other extraneous body be forced into the wound, it must be removed before you can attempt to heal the wound; and the same caution is to be observed in regard to any splinters of bone: when these are removed, the hæmorrhage is to be stopped, then suppuration is to be promoted, and new flesh encouraged, and care taken to procure an even cicatrix.

Extraneous bodies are much easiest to be removed at first; for after some delay the tumor, and inflammation of the part, render it difficult and painful: besides, the bullets will by degrees work themselves deeper, and be buried under the muscles, which will occasion fistulæ, rigidity of the limb, and other inconveniences. In extracting balls that lie deep, you must take great care not to lay hold of blood-vessels or nerves; which accident will be best avoided, by introducing the forceps shut, and not opening them till you feel the ball.

Sometimes the orifices of these wounds are so narrow, that it is impossible to come at the body you are to extract, without making a larger opening; this then must be done on the most convenient side, always observing that no nerve, blood-vessel, tendon, or ligament, lies in the way. When the parts are very much inflamed and swelled, an opening of this kind is frequently of service; for by this means the obstructed blood is discharged, and the bad consequences of the inflammation are prevented. When the extraction of the ball is attempted, the patient must be put into the same posture and situation that he was in when he received the wound. When the ball has penetrated so deep, that it may be easily felt with the finger on the opposite side, it is sometimes better to make an incision there, and take it out in that place, than to attempt the getting it back the other way. If the wound cannot safely be enlarged, nor the ball extracted at first, without great pain and danger, it must be left in the wound, either till the pain is abated, or the wound is so enlarged by suppuration, that it either can work itself out, or be extracted with less danger. On the other hand, all other extraneous bodies are instantly to be removed, where there is danger of their bringing on pain, inflammation, and convulsions, by being left behind. If a ball has passed into the cavities of the body, it is best not to attempt to extract it, but to heal the wound, leaving it there. Persons have carried a ball in them thus, for many years, without inconvenience; and, at one time or other, it frequently happens that it will work itself into some part of the body, out of which it may be extracted with safety.

If a large artery is wounded by the ball, either in the arms or legs, which will be known by the loss of blood, the tourniquet

must be applied, and, the blood being stopped, the vessel must be taken up by a crooked needle; but, if this cannot be done, or little hopes of a cure appear from future dressings, it will be prudent to take off the limb just above the wound. When wounds of this kind have been well cleaned, and the blood stopped, the first intention is to use the utmost endeavours to prevent or assuage the tumour and inflammation. The wound should be dressed with lint dipped in warm spirits of wine, and covered with a compress wetted with the same liquor; or with camphorated spirits of wine, either alone, or diluted with lime water. Having done this, the next intention is to forward the suppuration of the bruised and torn parts; to which end, it is customary to use the common digestive made of turpentine dissolved in the yolk of an egg, or a mixture of basilicon and Arcæus's liniment, softened with spirits of wine and oil; and, where there is a very great corruption of the parts, a little myrrh and aloes are to be added, as also Venice treacle, the brown ointment, and, where the occasion requires it, and the nerves do not lie bare, a little of the red precipitate.

In deep wounds, where the ball has gone quite through, a skein of thread being drawn through the eye of a blunt needle, and well saturated with the digestive ointment, is to be passed through the wound in the manner of a seton, and kept there till the wound is found in a condition to heal, and then the common methods are pursued to heal and cicatrize. *Heister's Surgery.*

GUNTER's LINE, called also the *Line of Numbers*, and the *Line of Lines*, is a graduated line usually placed upon scales, sectors, &c. so called from Edmund Gunter, its inventor.

This line is no other than a logarithmic scale of proportionals, wherein the distance between each division is equal to the number of mean proportionals contained between the two terms, in such parts as the distances between 1 and 10 is 10000, &c. Wherefore,

If the distance betwixt 1 and 10 upon the scale be made equal to 10000, &c. equal parts, and .954, &c. the logarithm of 9 of the same parts, be set off from 1 to 9, it will give the division standing against the number 9. In like manner, if .903, .845, .778, which are the logarithms of 8, 7, and 6, of the same equal

parts, be set off from 1 to 8, 7, and 6, they will give the divisions answering to the numbers 8, 7, and 6, upon the line. And after the same manner may the whole line be divided.

This line may be contrived various ways, for the advantage of having it as long as possible. It was first placed, by its inventor Edmund Gunter, on a two feet scale. After this, Wingate doubled the line, in order to render it susceptible of working right on or a-crofs. Then, the learned Oughtred projected it in a circle, and also made it to slide: and, lastly, it was projected in a kind of spiral, by Brown.

But the method of using or applying it in all is not very different. In Gunter's and Wingate's projection, common compasses are used; in Oughtred's and Brown's, flat compasses, or an opening index; and in the sliding-rule, no compasses at all, the slider supplying the place of the compasses.

Description of GUNTER's Line. This line is usually divided into an hundred parts, every tenth whereof is numbered, beginning with 1, and ending with 10. So that, if the first great division 1 represent one tenth of any integer or whole number, the next 2 will represent 2 tenths, 3, three tenths, &c. and the intermediate divisions of so many 100th parts of the same integer. Or, if these subdivisions represent 10 integers, then each of the larger divisions will represent 100, and the whole line will be 1000.

In like manner, it may be extended to 10000 by making each subdivision 100. Hence, it is easy to conceive, that any number whatsoever may be found upon the rule, by increasing or decreasing the large divisions, and, consequently, the single line will represent the whole table of logarithms.

Use of GUNTER's Line.—1. One number being given to be multiplied by another, to find their product.

Suppose the numbers given were 8 and 4, to find their product.—Extend the compasses from 1 to 4, and that extent laid from 8, the same way, will reach to 32, the product required. Or, if you work by the sliding rule, set 1, at the beginning of the sliding-piece, against 4 on the upper or fixed piece; and against 4 on the slider stands 32, on the upper or fixed piece, which is the product required. Whence it is abundantly evident, that the sliding-piece performs the office of the

compasses; and therefore, when the method of solving any problem by the compasses is understood, there will be no difficulty of solving the same by the sliding-rule.

2. One number being given to be divided by another, to find the quotient. Suppose it were required to divide 64 by 4. Extend the compasses from 4 to 1, and the same extent, laid the same way, will reach from 64 to 16, the quotient required.

3. Three numbers being given to find a fourth in direct proportion.—Let the numbers given be 7, 22, and 14. Extend the compasses from 7 to 22, which extent laid the same way, will reach from 14 to 44, the fourth proportional required.

4. To find a mean proportional between two given numbers. Bisect the distance between the two given numbers, and the point of bisection will fall on the proportional sought. Thus, if the numbers given be 32 and 8, the middle point between them will be 16, which is the mean proportional required.

5. To extract the square root of any number.—Bisect the distance between 1 on the line, and the point representing the given number; the half whereof being laid from 1, will give the root required. Thus the square root of 9 will be found to be 3, of 81, 9, &c. The reason of these operations will be easily conceived, by considering the nature of logarithms; for, as we have already observed, this line is no other than a projection of the table of logarithms, and, consequently, whatever is said of the latter may justly be applied to the former. See *Logarithms*.

GUNTER's QUADRANT, one made of wood, brass, &c. containing a kind of stereographic projection of the sphere on the plane of the equinoctial; the eye being supposed placed in one of the poles.

Besides the use of this quadrant in finding heights and distances, it serves also to find the hour of the day, the sun's azimuth, and other problems of the globe. See the article *Gunter's Quadrant*.

GUNTER's SCALE, called by navigators simply the Gunter, is a large scale, generally two feet long, and about an inch and a half broad, with artificial lines delineated on it, of great use in solving questions in trigonometry, navigation, &c.

The line of numbers on these scales consists of two equal lengths, commonly called two radii; the first containing the loga-

G U N

Logarithms of numbers from 10 to 100 ; and in the second are inserted those between 100 and 1000, or such of them as can conveniently be introduced.

These divisions are taken from a scale of equal parts ; such, that 100 make the length of one radius ; and from this scale the divisions for the sines, tangents, and versed sines, are also taken. Now, from this construction of the line of numbers, it is plain, that, as the numbers in one radius exceed those in the other, by one place in the scale of numeration, therefore the differences of their indices must also be unity : so that such numbers only, whose index differs by 1, can be estimated in a length of two radii ; but in a length of three radii, numbers, whose indices differ by 2, may be read ; and a difference of 3 may be reckoned in a length of 4 radii, &c. The tables of logarithmic sines, tangents, secants, and versed sines, are generally computed for a circle, whose radius is 10,000,000.

To construct the Line of logarithmic Sines on GUNTER's Scale.—From the scale of equal parts, take the numbers expressing the arithmetical complements of the logarithms of the successive degrees, and parts of degrees, intended to be put on the scale, descending orderly from 90° ; then these distances, successively laid from the mark representing 90° at the right-hand end of the scale, will give the several divisions of a scale of logarithmic sines.

For the ends of any scale being assigned, the progressive divisions of that scale are laid thereon from that end, which represents the beginning of the progression ; or the same divisions may be laid from the other end, by taking the complements of the terms to the whole length of the scale.

Consequently the arithmetical complements of the sines are to be laid from the division representing 90 degrees.

To construct the line of logarithmic Tangents on GUNTER's Scale.—These are laid down in the same manner, and for the same reasons, that the sines were ; the tangent of 45° standing against the sine of 90°.

The divisions for the tangents above 45° are reckoned on the same line from 45° towards the left hand ; or any tangent and its co-tangent are expressed by the same division.

Thus one mark serves for 40° and 50°, and the division at 30° serves also for 60° ; that at 20° serves for 70°, &c. and the

G U N

like is to be understood for the intermediate divisions.

For as the tangent of an arc is to a radius ;

So is radius to the co-tangent of that arc.

Therefore the tangent is equal to the square of radius divided by the co-tangent.

And the co-tangent is equal to the square of radius divided by the tangent.

Now, the radius being unity, its square is also unity.

Therefore the tangent and co-tangent of any arc are the reciprocals one of the other.

But the reciprocals of numbers are correlative to the arithmetical complements of their logarithms.

Therefore the logarithms of a tangent and its co-tangent are arithmetical complements one of the other, and consequently will fall at equal distances from 45 degrees.

Therefore, in the line of logarithmic tangents, the divisions to degrees under 45 serve also for those above, both being equally distant from 45 degrees.

To construct the Line of logarithmic versed Sines on GUNTER's Scale.—As the greatest number of degrees will fall within the limits of the scale by beginning at 18°, therefore the termination of this line is at 18°, which is put against 90° on the sines ; and although the numbers annexed to the divisions increase in the order from right to left, yet they are only the supplements of the versed sines themselves.

Now subtract the logarithmic versed sines of such degrees and parts of degrees as are intended to be put on the scale, from the logarithm versed sine of 180° ; then the remainder taken from the fore-said scale of equal parts, and laid successively from the termination of this line, will give the several divisions sought.

Deg.	Supplements of Versed Sines	Deg.	Supplements of Versed Sines
180	0,00000	90	0,30103
170	0,00331	80	0,38387
160	0,01330	70	0,48282
150	0,03011	60	0,60206
140	0,04402	50	0,74810
130	0,08545	40	0,93190
120	0,12494	30	1,17401
110	0,17327	20	1,52066
100	0,23149	10	2,21941

The preceding table to every 10 degrees was constructed in the foregoing manner.

G U N

manner, and are the numbers to be taken from the scale of equal parts, for the degrees they stand against.

From which table it appears, that the least verfed sine which can be introduced within the length of a double radius, falls between 10° and 20° , where the index changes from 1 to 2; which will happen about $11^{\circ} 28'$.

If a table of logarithm verfed fines to 180° are wanting, they are easily made by the following rule:

“Take the logarithm sine of 30° degrees from twice the logarithm sine of (N) any number of degrees; the remainder is the logarithm verfed sine of ($2N$, or) twice those degrees.”

For it is a well known geometrical property, that the sine of any arc (A) is a mean proportional between radius (R) and half the verfed sine of twice that arc.

Therefore putting v for the verfed sine, and s for the sine;

$$\begin{aligned} \text{The } v \ 2 \ A &= \left(\frac{2 \ s \ s \ A}{R} = s \ s \ A \times \frac{2}{R} \right. \\ &= s \ s \ A \times \frac{2}{10} = \left. \right) s \ s \ A \times \frac{1}{5}; \text{ radius} \\ &\text{being } 10. \end{aligned}$$

Or the $\log. \ v \ 2 \ A = 2 \log. \ s \ A - \log. \ 5$.

But, when radius is 10, the sine of 30° is 5.

Therefore the $\log. \ v \ 2 \ A = 2 \log. \ s \ A - \log. \ \text{sine of } 30^{\circ}$.

Most of the writers on this subject give the following rule for laying down the divisions of this line:

“From the line of logarithmic fines, take the distance between 90° and any arc; that distance being twice repeated, from the termination of the line of verfed fines, will give the division for twice the complement of that arc.”

Thus the distance between 90° and 20° on the fines twice repeated gives the verfed sine of 140° ; or twice 70° , the complement of 20° . For the divisions to be laid on this line, are the differences between the logarithm verfed sine of 180° , and the logarithm verfed fines of the successive arcs.

Now the difference between the logarithm verfed fines of 180° , and of any arc $2 \ A$, is $\log. \ \text{ver. sine } 180 - 2 \log. \ \text{fin. } A + \log. \ \text{fin. of } 30^{\circ}$.

Or, $10,30103 + 9,69897 - \text{twice } \log. \ \text{fin. of } A$.

Or, $20,00000 - \text{twice logarithm sine of } A$.

Or the arithmetical complement of twice $\log. \ \text{sine of } A$.

G U T

That is, the difference between the logarithm verfed sine of 180° , and the logarithm verfed sine of any arc, is equal to double the arithmetical complement of the logarithm sine of half that arc, rejecting the indices.

But as the differences give the divisions to the supplements of the real verfed fines, therefore the arithmetical complement of the logarithm sine of any arc, being doubled, will give the distance of the division for the supplement of twice that arc on the line of verfed fines.

Thus for 70° , the logarithm sine is 9,97299.

The arithmetical complement is 0,02701.

Its double is 0,05402.

Which is the number in the foregoing table standing against 140° , and is the supplemental verfed sine of twice 70° deg.

Now as the arithmetical complement of the $\log. \ \text{sines of arcs}$ are the distances on the line of fines between 90° , and the divisions to those arcs; therefore the distances between 90° and any arc, being twice repeated, will give the division of the supplemental verfed sine to twice the co-sine of that arc. *Phil. Trans.* Vol. XLIX.

GURNARD, in ichthyology, the English name of two species of trigla.

GUSSET, in heraldry, is formed by a line drawn from the dexter or sinister chief points, and falling down perpendicularly to the extreme base.

GUTTÆ, in architecture, ornaments in form of little cones, in the platform of the Doric cornice, or architrave, underneath the triglyphs, representing a sort of drops or bells, usually six in number. They are sometimes called lacrymæ, campanæ, or campanulæ.

GUTTÆ *Rosacea*, in medicine, denotes a red or pimpled face; a distemper which, though not always owing its original to hard drinking, is nevertheless most incident to tipplers of strong beer, wines, spirits, &c.

As to the cure, besides making a revulsion by bleeding, blistering, cupping, issues, &c. the diet ought to be moistening, and cooling, as lettuce, purslain, sorrel, and spinach: the drink may be an emulsion of the cold seeds, milk and water, clarified whey, &c.

In the use, however, of this cooling regimen, great caution is necessary: for if a person be taken off at once from his strong liquors, and allowed nothing but whey, or milk and water, it may cost him his life, by hastening a sudden decay

G U T

of heat, palling his appetite, and bringing on a leucophlegmatia, or dropsy.

As for what concerns topics, much caution is likewise to be used. If there be only redness without pimples, and the disease recent; refrigerents and repellents take place: but, if pustules appear, discutients must be mixed; and if these pustules seem hard, and the disease be of long standing, there may be reason for emollients to ripen and digest the tough and viscid matter, which is afterwards to be left out.

If the disease be stubborn, and the tubercles grown hard, we are to begin with emollients, both fots and ointment: such are the decoction of mallows, vervain, Solomon's seal, and linseed, also a cerate of sperma-ceti, or Bates's white cerate. *James's Med. Diet.*

GUTTA Serena, barbarously so called by the Latin writers of the lower ages, in medicine, is a total blindness in the principal parts of the immediate organ of vision, the eye still continuing clear and seemingly unaffected.

This disorder proceeds from various causes, of which the most common is an obstruction gradually formed in the arteries of the retina by a fizy blood; whereby the rays of light which should depict the images of objects on the bottom of the eye, falling on these dilated blood-vessels, produce no effect; whence the sight is either diminished, or entirely lost, according to the degree of the obstruction. Again, this disease is sometimes owing to a palsy of the nerves of this same membrane, as it in some measure destroys their sensibility, whereby the impulse of the corpuscles of light on them is not sufficient to make them transmit objects to the brain. In short, I have observed that this species of blindness is also occasioned by a pressure on the optic nerves, either by the extravasation of a glutinous humour, or by a hard tumour formed upon the place, where they pass from their thalami into the eyes; whereby the passage of the animal spirits to the brain is totally intercepted.

The second and third species of the gutta serena may be deemed incurable, as their causes are rendered inaccessible by their very situation within the skull. Wherefore it is only the first species of this blindness that is curable; unless perhaps there may be some faint hopes of relieving that sort which proceeds from a palsy of the retina, by antiparalytic me-

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dicines, of which the principal are aromatics, chalybeates, and foetid gums.

GUTTERS, in architecture, a kind of canals in the roofs of houses, serving to receive and carry off the rain.

GUTTURAL, a term applied to letters or sounds pronounced or formed as it were in the throat.

GUTTY, *Gutté*, in heraldry, a term used when any thing is changed or sprinkled with drops.

In blazoning, the colour of the drops is to be named, as gutty of sable, of gules, &c.

GUZES, in heraldry, roundles of a sanguine or murry colour. These, from their bloody hue, are by some supposed to represent wounds.

GYMNASIUM, the place where bodily exercise were performed among the Greeks, being a public edifice, under proper masters.

The Greeks were the first who had gymnasia; particularly the Lacedæmonians, and afterwards the Athenians; from whom the Romans borrowed them.

At Athens were three of these places of exercise; the academy, where Plato taught; the lyceum, where Aristotle read his lectures; and the cynosarges, destined for the common people.

There were also medicinal exercises, as walking, vociferation, and holding the breath.

The bodily exercises that depended on external agents, were mounting the horse, riding in a chaise, litter, or other wheel carriage, rocking, swinging, and likewise swimming. Hoffman reckons up thirty-five gymnastic exercises.

GYMNASTICS, the art of performing the several bodily exercises, as wrestling, running, fencing, dancing, &c.

The part of medicine which regulates the exercises of the body, whether for preserving or restoring health, is also termed gymnastic.

GYMNOSPERMIA, in botany, a series or sub-division of the didynamia class of plants; comprehending all those with labiated flowers, without any pericarpium or capsule surrounding their seeds, which are only lodged in the base of the cup; whence the name gymnospermia.

GYNÆCEUM, among the ancients, the apartment of the women, a separate room in the inner part of the house where they employed themselves in spinning, weaving, and needle-work.

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GYNANDRIA, in botany, a class of plants.

The general character of which is very obvious; they are distinguished at first sight from all others, by the stamina being placed upon the style; or, in other words, the receptacle is elongated into the form of a style, and bears on it both the pistil and stamina. Among the plants of this class are the passion-flower, birth-wort, &c.

GYPSUM, or **PLASTER-STONE**, in natural history, a genus of fossils naturally and essentially simple, not inflammable nor soluble in water, and composed of

G Y P

small flat particles; which form bright, glossy, and in some degree transparent masses, not flexible or elastic, not giving fire with steel, nor fermenting with or being soluble in acid menstrua, and very easily calcining in the fire.

Of these gypsums, some are harder, others softer; and are of several colours, as white, grey, red, green, &c. sometimes distinct, and very variously blended together.

The gypsums are much used in plaster, for stuccoing rooms, and casting busts and statues.

GYPSUM STRIATUM, striated plaster-stone.

H.

H A B

H, The eighth letter, and the sixth consonant of the English alphabet.

It is a consonant of the guttural kind, as the throat concurs more to its formation than any other of the organs of speech.

Menage distinguishes two kinds of *h*; the one an aspirate, which is a consonant; and the other a mute, which has no peculiar sound distinct from that of the immediately following vowel or diphthong.

When the *h* is preceded by a *c*, both together often sound like the Hebrew *shin*, with a point over the right horn, as *charity*, &c.

The *ch* in most words derived from the Greek, and expressed in that language by the *chai*, is generally sounded like a *k*, as *echo*, *chorus*, *choir*, &c. though sometimes softened, as *Gherfonesus*.

Pb is pronounced like an *f*; as *phrases*, *physic*, *phlegm*, &c. most of these words being of Greek, or Oriental original, proper names, &c.

H, among the ancients, denotes 200; and when a dash was added at top, as *H*, it signified 200,000.

HABBAKUK, or the prophecy of Habbakuk, a canonical book of the Old Testament.

There is no mention made in Scripture, either of the time when this prophet lived, or of the parents from whom he was descended; but according to the authors of the lives of the prophets, he was of the

H A B

tribe of Simeon, and a native of Beth-zacar. As he foresaw the taking of Jerusalem by Nebuchadnezzar, he fled to Ostracin in Arabia, where he lived for some time; but after the Chaldeans had made themselves masters of Jerusalem, and were on their return home, he returned into Judæa, where he employed himself in agriculture; but as he was carrying the reapers their dinner, he is said to have been transported by an angel to Babylon, with what he had provided for his people in the field; which he set before Daniel, who was shut up in the lions den, and was transported back again to Judæa, where he died, before the end of the captivity.

He is reported to have been the author of several prophecies which are not extant; but those that are indisputably his, are contained in three chapters. In these the prophet complains very pathetically of the disorders which he observed in the kingdom of Judæa. God reveals to him, that he would shortly punish them in a very terrible manner by the arms of the Chaldeans. He foretels the conquests of Nebuchadnezzar, his metamorphosis, and death. He predicts, that the vast designs of Jehoiakim would be frustrated. The third chapter is a song or prayer to God, whose majesty he describes with the utmost grandeur and sublimity of expression.

HABEAS CORPORA, in law, a writ issued for bringing in a jury, or such of them

them as refuse to appear upon the venire facias, for the trial of a cause brought to issue. It commands the sheriff to have the jurors before the judges on such a day, &c. and is of the same nature in the Common-pleas, as the distringas juratores in the court of King's Bench.

HABEAS CORPUS, in law, a writ of two kinds, the one being the great writ of the English liberty, which lies where a person is indicted for any crime or trespass before justices of the peace, or in a court of any franchise, and on being imprisoned, has offered sufficient bail, which has been refused, though the case be bailable; in which case he may have this writ out of the King's Bench, in order to remove himself thither, to answer the cause at the bar of that court.

The practice, in this case, is first to procure a certiorari out of the court of Chancery, directed to all the justices, for removing the indictment into the King's Bench; and upon that to obtain this writ, directed to the sheriff, for causing the body of the party to be brought at a certain day.

The other kind of habeas corpus is used for bringing the body of a person into court, who is committed to any prison, either in criminal or civil causes; which writ will remove the person and cause from one court and prison to another.

No habeas corpus, or other writ, to remove a cause from out of an inferior court, can be allowed, if the same be not delivered to the judge of the court, before the jury who are to try the cause have appeared, and before any of them are sworn. 43 Eliz. cap. 5.

The habeas corpus act, 31 Car. II. cap. 2. has ordained, that a person may have a habeas corpus from any judge, on complaint made and view of the warrant of commitment, (except such person is committed for treason or felony expressed in the warrant, or some other offence that is not bailable,) which habeas corpus must be made returnable immediately; and on producing a certificate of the cause of commitment, the prisoner is to be discharged on bail given to appear in the court of King's Bench the next term, or next assizes, &c. Persons committed for either treason or felony, expressly mentioned in the warrant, upon a motion made in open court, in the first week of the term, or day of sessions, &c. after commitment, are to be brought to trial: and if they are not indicted the next term

or sessions after commitment, on a motion made the last day of that term, they shall be let out upon bail, except it appear on oath that the king's witnesses are not ready; and in case they are not indicted or tried the second term after commitment, they shall be discharged.

Judges denying a habeas corpus, shall forfeit 500*l.* and if an officer refuse to obey it, or to deliver a true copy of the commitment-warrant, he forfeits 100*l.* for the first offence.

HABEAS CORPUS AD PROSEQUENDUM, a writ for the removal of a person, in order to prosecution and trial in the proper county.

HABEAS CORPUS AD FACIENDUM ET RECIPIENDUM, a writ issued out of the court of Common-pleas, on behalf of defendants sued in inferior courts, to remove their cause into the said court.

HABEAS CORPUS AD RESPONDENDUM, a writ that lies where a person is imprisoned at another's suit in any prison except that of the King's Bench, and a third person would sue the prisoner there; in which case this writ will remove such person from the prison where he is, into the King's Bench, to answer the action in that court.

HABEAS CORPUS AD SATISFACIENDUM, a writ that lies against a person in the Fleet-prison, &c. to charge him in execution. The delivery of this writ to the warden is sufficient.

HABENDUM, in law, a term signifying to have and to hold.

A deed or conveyance has two principal parts; the premises and the habendum. The office of the first is, to express the names of the grantor, the grantee, and the things granted: that of the habendum, to shew what estate or interest the grantee is to have in what is granted.

HABERDASHER, in commerce, a seller of hats, or of small wares.

HABERE FACIAS VISUM, a writ that lies in divers cases, as in dower, foremedon, &c. where it is necessary to take a view of the lands or tenements in question.

HABERGEON, a small coat of mail, or only sleeves and gorget of mail, formed of little iron rings, or meshes linked into each other. See *Gorget*.

HABIT, in philosophy, an aptitude or disposition either of mind or body, acquired by a frequent repetition of the same act.

Custom, says Mr. Locke, settles habits of thinking in the understanding, as well as of determining in the will, and of motions in the body, all which seem to be but trains of motion in the animal spirits, which once set a-going, continue on in the same steps they have been used to, which by often treading are worn into a smooth path, and the motion in it becomes easy as well as natural.

Fenelon, archbishop of Cambray, defines habits in general to be the certain impressions left in the mind, by means of which we find a greater ease, readiness, and inclination to do any thing formerly done, by having the idea ready at hand to direct us how it was done before.

Thus, for example, we form the habit of sobriety, by having always before us the inconveniences of excess; the reflections of which being often repeated, render the exercise of that virtue continually more and more easy.

HABIT, in medicine, denotes the settled constitution of the body, or the habitude of any thing else, as the structure or composition of a body, or the parts thereof.

HABIT is also used for a dress or garb, or the composition of garments, where-with a person is covered; in which sense we say, the habit of an ecclesiastic, of a religious, &c. a military habit, &c.

HABITUDE, among schoolmen, the respect or relation one thing bears to another.

HABITUDE is also used by philosophers for what we commonly call habit, or a certain disposition or habitude for the performing or suffering certain things, acquired by repeated acts of the same kind.

HADDOCK, the English name of a well-known fish of the gadus kind, with a bearded mouth, and three fins on the back: its body is whitish, the upper-jaw longest, and the tail a little forked.

HÆMANTHUS, guinea-orchis, in botany, a genus of plants, the flowers of which stand at the top in a kind of little umbel, and are of a very beautifully stellated appearance.

HÆMATITES, in natural history, the blood-stone, a kind of mineral so called, on account of its resembling curdled blood, or from its quality of stopping blood.

We are to distinguish carefully between two very different species of fossils, called by the common English name

blood-stone; the one is a semi-pelucid gem, of a green colour, spotted with red, and is properly called the heliotrope; the other is a mere ore of iron, and a very rich one.

The several species of the last of these are found in England, and in great abundance also in the German mines, where masses of them are sometimes met with quite black, and of an elegant polish; and others covered with golden armature, as high and elegant as if of absolute leaf gold, laid on in the common way of gilding. Blood-stone is to be chosen for medicinal use the highest coloured and most like cinnabar that can be had, and such as is heaviest and formed with the finest stræ. It is accounted astringent and desiccative. It is given in powder, from ten grains to twenty-five, for a dose in hæmorrhages, and is used in distemperatures of the eyes.

HÆMOPTOSIS, in medicine, a spitting of blood, occasioned by the rupture or erosion of some vessel in the lungs, commonly attended with a cough and pressure on the thorax.

HÆMORRHAGE, *Hæmorrhagia*, in medicine, an eruption of the blood from any part of the body.

The spontaneous evacuations of blood, produced naturally, are made from such parts of the body as are of a lax and tender texture, have very minute and slender vessels every where dispersed, and not braced up throughout by firm membranes; such as the interior part of the nostrils, the bronchia, the gums, stomach, the ilium, the extremity of the rectum, the uterus and vagina.

The disposition of hæmorrhages is for the most part hereditary, and conveyed from parents to their children; but it is most speedily put in action, and exerts itself, by means of such external causes, as render the circulation of the blood too brisk, or increase the intestine commotion of its parts. The most considerable of the causes are, all exercises of the body and mind more intense than usual; aliments or medicines, taken internally, which are either too hot, acrid, or spirituous; as also the preposterous and unseasonable use of baths, sudorifics, and purgatives.

As eruptions of blood, when arising from a repletion of the vessels, and redundancy of blood, are highly salutary, and beneficial to the constitution; so they are full of danger, when excited by a malignant acrid matter, as in malignant and

and exanthematous fevers : and when they rise from an obstruction, induration, or corruption of the viscera, especially of the liver, spleen, or lungs, they generally prove mortal, because they readily terminate in a cachexy, a dropsy, the morbus niger of Hippocrates, or an hectic which proves fatal.

With respect to the cure of hæmorrhages in general, I would have it observed, that their practice is highly preposterous, who, maintaining that a redundancy of red blood, so called by way of eminence, is universally the material, as well as accidental cause of these disorders, use frequent venesections for their cure ; though at the same time, at the beginning of the disorder, for the sake of prevention, especially in sanguineous habits, seasonable venesection is highly salutary and beneficial. But the justest and most rational intentions of cure consist in driving the impetus of the blood from the part affected by proper remedies ; such as bathing the feet, clysters, frictions, and ligatures of the external parts, warm covering, fomentations, and baths. Then the spasmodic strictures of the nervous parts are to be relaxed. And lastly, by gentle laxatives, as cassia, &c. moderate diaphoretics, and abstinence from light feeding, which generates blood, the redundancy of the serous colluvies is to be removed, and its accumulation for the future prevented.

Frederic Hoffman.

HÆMORRHAGE, or *Bleeding at the Nose*, is owing to the more plentiful apulse of blood to the nostrils, by a stronger motion of the heart, whereby the small arteries in the pituitary coat become turgid, and too much distended, till at length they gape, and the blood gushes out. A bleeding at the nose may be promoted, when persons of sedentary lives, that indulge their appetites, and so become plethoric, put their blood into extraordinary agitation, by any of the causes already mentioned, or by volatile medicines, hot baths, or suddenly chilling their feet, &c. This hæmorrhage differs much as to the quantity : some lose only a few drops, some several ounces, and some five or six pounds. No hæmorrhage is more apt to return ; which it does to some in a few days, to others in a few hours. To the plethoric it is generally salutary ; and there are many instances, of a vertigo, scotomia, dull heavy pains of the head, a phrenzy, and even an epilepsy, being carried off by it. On the contrary, from its suppression there have arisen vertigoes,

apoplexies, epilepsies, convulsions, noise in the ears, hardness of hearing, and even a gutta serena.

But enormous and long-continued bleedings at the nose, when they arise from spasms of the internal parts, and are preceded with coldness of the extreme parts, and fainting fits, generally occasion death : it is also dangerous in spotted and malignant fevers, and in chronical diseases. If the bleeding is very inordinate, it will be proper to use cooling emulsions, gentle or stronger opiates, to moderate the spastic strictures, as occasion shall require. Camphor mixed with nitre and calx of antimony, will be highly necessary, if the matter of exanthemata or cutaneous eruptions is the cause of the hæmorrhage, as is often the case. A revulsion may be made from the head by bleeding in the lower parts, then by temperate pediluvia, and putting the hands into warm water. After a revulsion by bleeding, there is nothing equal to nitre, to appease the orgasm of the blood ; next to these are vegetable acids, such are the juice of Seville oranges, barberries, the water and juice of wood sorrel ; but more especially the diluted spirit of vitriol, tincture of roses, &c.

Externally refrigerants may be mixed with discutients, and applied to the forehead, nose, and neck. In persons of a bilious constitution, cold water alone, drank freely, has a good effect.

HÆMORRHOIDAL. The veins and arteries of the rectum and fundament are so denominated, as being the seat of the hæmorrhoids.

HÆMORRHOIDS, *Hæmorrhoides*, the piles, or a discharge of blood from the hæmorrhoidal veins about the anus and rectum. Every liberal discharge of blood from the veins of the anus is not to be accounted excessive and preternatural ; but in order to form an estimate of this circumstance, we are carefully to consider the vessels, the habit of body, the strength, the age, and the constitution of the patient ; for it frequently happens that the discharge of a certain quantity of blood proves salutary and beneficial to some ; whereas the evacuation of an equal quantity proves hurtful and injurious to others ; nor is every hæmorrhoidal discharge, though larger than usual, and excited by the increased quantity and commotion of the blood, to be esteemed a disease ; but only such a discharge as continues long, impairs the strength, destroys the appetite, the due digestion of the aliments, nutri-

tion, and the other functions of the body, and consequently lays a foundation for violent chronical disorders.

Every evacuation of blood from the intestinum rectum is supplied from the hæmorrhoidal vessels; but the external hæmorrhoidal vessels rarely flow profusely, but readily degenerate into painful varices, which, when opened, discharge blood, though seldom in large quantities. But the internal hæmorrhoidal vessels, which are ramifications of the splenic branch, and are distributed to the interior substance of the intestinum rectum, and the sphincter ani, together with the small arteries arising from the inferior meseraic vessels, not only discharge a large quantity, but, when suppressed, generates those diseases which arise from disorders of the liver, spleen, pancreas, mesentery, and intestines.

It is usually agreed that this salutary evacuation from the veins of the anus is owing to a difficult circulation of the blood through the hæmorrhoidal veins, in consequence of their perpendicular situation, and its difficult return to the vena portæ and the liver; and that the discharge actually happens, when the extremities of the vessels, in the intestinum rectum, are so distended by the blood accumulated in them, as at last to be ruptured.

The cure.—As this disorder may proceed from various causes, so there must be various intentions of cure pursued, and different remedies made choice of.

It frequently happens, that when, in plethoric bodies, the hæmorrhoidal discharge, usual at other times, is for some time stopped, it not only appears again suddenly, upon any violent commotion either of body or mind, the liberal use of spirituous liquors, too hot baths, or upon taking medicines increasing the intestine motion of the blood, but continues long, and is attended with a large and strong pulse. When this is the case, the first step to be taken is to divert the impetus of the blood: for this purpose venesection in the arm, or an immersion of the arms in a tepid mixture of water and wine, are of singular service: then we are to use such things as check the excessive intestine motion of the sulphureous parts of the blood, especially things of a diluting and refrigerating nature, such as drinking cold water, especially of the chalybeate kind, tincture of roses prepared with spirit of vitriol, a decoction of hartshorn, mixed with citron or lemon juice. When, together with a loss of strength, and an injured state of the nobler functions, a large hæmor-

rhoidal discharge continues for a long time, and the viscera begin to be tainted, whilst, at the same time, the blood is rather aqueous and serous than fibrous, and of a due consistence; those medicines are highly beneficial, which gradually and mildly carry off, by stool, the peccant bilious juices, and at the same time invite the humours from the intestinum rectum to the coats and glands of the other intestines. The most efficacious of these are preparations of rhubarb, with currants and tamarinds; or, if the body is bilious, with cream of tartar, exhibited in a potion rendered agreeable by an eleosaccharum, prepared with the oil of citron.

In that more obstinate and difficultly cured species of the disorder, which arises from an obstruction, an infarction, or increased bulk, of any of the viscera; such as the liver, spleen, and, in women, the uterus;—if there is still any place for the means of relief, such medicines are to be chosen as resolve the obstructions without throwing the humours into too violent a commotion.

In no disease is an accurate and cautious regimen more necessary than in this, since, in consequence of a neglect in this particular, the most efficacious remedies will not produce their desired effect.

HAGAI, a canonical book of the Old Testament, so called from the prophet of that name, who, in all probability, was born at Babylon, from whence he returned with Zerubbabel. This prophet, by the command of God, exhorted the Jews, after their return from the captivity, to finish the rebuilding of the temple, which they had intermitted for fourteen years. His remonstrances had the desired effect; and to encourage them to proceed in the work, he assured them from God, that the glory of this latter house should be greater than the glory of the former: which was accordingly fulfilled, when Christ honoured it with his presence; for, with respect to the building, this latter temple was nothing in comparison of the former.

HAGIOSIDERON, in the Greek church, a name given to an instrument made of iron, used by the Greeks, under the dominion of the Turks, to supply the place of bells, the use of which is prohibited.

* HAGUE, a town of the United Provinces, and in the province of Holland. There are fine groves and pleasant meadows round about it, in the midst of which is a pleasure-house belonging to the princes of Orange. The buildings in this place

are

are magnificent, the streets large, and several of them shaded with fine trees. There are many squares, with rows of trees, which form very agreeable walks. They have a great number of coaches, and all parts of the town are exceeding fine. It is governed by its own magistrates, and enjoys all the privileges of a city, except that of sending deputies to the states. It is the seat of the states general and the states of the province; it is also the place where the supreme courts of judicature are held, and all public affairs transacted, which renders it a most flourishing place. Here all foreign ministers reside, as well as most of the nobility, which render it a much more polite town than any other of the Netherlands.

The trade is not great, but it is in a flourishing condition, on account of the great concourse of people of distinction, the academy, schools, and places for all sorts of exercise. There are but two churches, an old and a new, the latter of which is round without a pillar. The chapel of the earl of Holland is in the palace, and serves for a French church. On the west side of the palace is a large plain, surrounded with magnificent houses, in which the walks and trees give it a resemblance of St. James's park. Without the town, towards Leyden, there is a wood, in the middle of which is a house of pleasure, belonging to the prince of Orange, with stately rooms and beautiful gardens. It has also a very large ball-room, with a high roof rising into a cupola, on the top of which is a lantern, and a gallery for music, and the walls and ceilings are adorned with curious paintings. It is nine miles north-west of Rotterdam, and nine south of Leyden. Long. 4. 10. E. Lat. 52. 10. N.

HAIL, *Grando*, in physiology, a watery concretion in the form of pellucid white globules, that fall from the air. It is thought to be drops of rain frozen in their passage through the middle region: or according to the Cartesians, the fragments of a frozen cloud, half melted, precipitated and congealed again.

Hail is of various figures, according to the degrees of heat or cold of the air through which the liquified clouds pass. It frequently attends thunder and lightning; the nitre that contributes to the one, having also a large share in the production of the other.

HAIR, *Crinis* or *Capellus*, a sort of tegument for the greatest part of animals.

It is found on all parts of the human body, except the soles of the feet and palms of the hand.

Hair properly lives and receives nutriment to distend it like the other parts of the body; however, this growth is of a different kind from that of the rest of the body, and is not immediately derived therefrom, nor reciprocated therewith. It grows like plants out of the earth, or as some plants shoot from the parts of others, from which, though they draw the nutriment, each has its distinct life and economy.

Hairs are observed by the microscope to be hollow and furnished with a multitude of vessels; and, however they appear smooth to the naked eye, the microscope shews them knotted like some sorts of grass, and to send out branches from their joints.

Each hair has a little bulbous or oval root in the skin, which is sometimes plucked away with it. The hair is commonly reputed an excrement, and whatever the nature of its nourishment be, it seems to be more simple than the other humours of the body. For long after death, when all the other parts and humours are corrupted, the hair will vegetate. The size of hair depends on the magnitude of the pores they issue from: if those be small, these are fine; if the pores are straight, the hairs are so too; if those be oblique or sinuous, the hair is curled. Their length depends on the quantity of the proper humour to feed them; and their colour on the quality of that humour: whence at different periods of life the colour usually differs.

Hair, since perukes have been in use, makes a considerable article in commerce. That of the growth of the northern countries is much preferred to that of the more southern ones.

The merit of good hair consists in its being well fed, and neither too coarse nor too slender; the bigness rendering it less susceptible of an artificial curl, and disposing rather to frizzle; and the smallness making its curl of too short duration. Hair is sold from five shillings to five pounds an ounce, according to its quality. The grey is the most valuable, next to that the white, &c. The scarcity of grey and white hair put the dealers in that commodity upon artificial methods of rendering hair of these colours. They spread the hair to bleach on the grass, after washing it first in a lixivious water: they also dye hair with

with bismuth; both which artifices are detected by boiling and drying it.

HAIR's BREADTH, a measure of length, being the forty-eighth part of an inch.

HAKE, in ichthyology, the English name of the gadus, with two fins on the back, and the under jaw longest. It grows to two feet or more in length, but is the slenderest of all the gadi.

HALBARD, or HALBERT, in the art of war, a well known weapon, carried by the serjeants of foot and dragoons.

HALBERT, among farriers, a small piece of iron an inch broad, and three or four inches long, foldered to the toe of a horse's shoe, to hinder a lame horse from treading on his toe.

These halbert-shoes necessarily constrain a lame horse, when he goes at a moderate pace, to tread or rest on his heel, which lengthens and draws out the back sinew, that was before in some measure shrunk.

HALCYON, in ornithology, a name given by the ancients to the ispida, or king-fisher.

HALCYON DAYS, *Dies halcyonii*, in antiquity, a name given to seven days before and as many after the winter solstice; by reason the halcyon, invited by the calmness of the weather, laid its eggs in nests built on the rocks, close by the brink of the sea, at this season.

* HALE (STEPHEN) D. D. a celebrated divine and philosopher, was born in 1677, and in 1696 was entered a pensioner at Bennet college, Cambridge, and was admitted a fellow in 1703. He early discovered the bent of his genius to natural philosophy. Botany was his first study. He next applied to the study of anatomy in animal life, and was particularly taken notice of for inventing a curious representation of the lungs in lead. He is also said to have made, even when very young, a considerable progress in chemistry. But what rendered him most remarkable at the university, was the invention of a machine in brass to demonstrate the motions of the planets. It was constructed with great ingenuity, and was nearly the same with that afterwards invented by Mr. Rowley, under the name of the orrery. Mr. Hales being at length admitted to a doctor's degree, began to be much taken notice of in the learned world, and was elected a fellow of the Royal Society. He soon after received the thanks of that learned body for some experiments he communicated to them, on the nature of vegetation. In 1741 he

first published his most useful Invention of Ventilators, which he continued to improve during the rest of his life. About six or seven years after, one of them was put up in the prison of the Savoy; and though between fifty and a hundred persons had died every year of the jail distemper in that place, four persons only died in two years after his machine was erected, though the number of prisoners frequently exceeded two hundred. The use of ventilators was afterwards introduced into the king's ships, and other places; and in the last war, after long solicitations, he procured an order from the French king to erect them in the prisons where the English were confined. In short, it would be almost endless to enumerate this great philosopher's various researches into nature, and all the schemes he published for the benefit of mankind; most of which are to be found in The Transactions of the Royal Society, and discover his great knowledge of the secrets of nature. He spent the latter part of his life chiefly at his parsonage at Teddington, near Hampton-Court; where he was honoured with the company of some of the greatest persons in the nation; whom, without any of the fashionable modes of polite breeding, he received and visited with patriarchal simplicity; and among those who honoured him with their particular esteem, was the late prince Frederic, his present majesty's father, who often took a pleasure in surprising him in his laboratory. After the death of that amiable prince, the princess's household was no sooner settled, than he was appointed her almoner, and did credit to her choice. She even caused him to be nominated to a canonry of Windsor; but being fully satisfied with his circumstances, he waited upon the princess, and engaged her to put a stop to the affair. This truly great man directed all his studies, and all his researches into nature, to one point, that of doing good to mankind. Blest with serenity of mind, and an excellent constitution, he attained the age of eighty-four, and died on January 4, 1761.

HALF-BLOOD, in law, is where a man marries a second wife, the first being dead, and by the first venter has a son, and by his second venter has likewise a son, the two brothers in this case are but of half-blood; they being issue by different venters; and on that account, lands in fee cannot descend from one to the other; except in case of crown-lands, dignities, or estates tail. But half-blood is no impediment

pediment to an administration, which may be granted to that as well as to the whole blood, of the effects of an intestate; and the half-blood shall come in for a share of his personal estate, equally with the whole blood, as the brothers by different venters are next of kin in equal degree. 22 Car. II. cap. 10.

HALF-MOON, *Demi-Lune*, in fortification, a work commonly made before the curtain or flanked angle of the bastion: the former generally consists of two little flanks and two faces, which terminate in a salient angle towards the fields; the gorge of the demi-lune is terminated by two lines continued from the counterscarpe of the fosse, that form an entering angle towards the place, about the middle of the curtain. The demi-lune on the flanked angle of the bastion differs only from the former, in that it is formed by a circular line; and hence it takes its name demi-lune.

***HALF-PENCE**, and farthings, were first coined by government, August 16, 1672.

HALF-SEAL, that used in the court of chancery for sealing commissions to delegates, upon any appeal, in ecclesiastical or marine causes.

HALIARDS, in the marine language, the ropes or tackles by which the sails are hoisted up along the masts or stays of the ship.

* **HALIDOWNE** hill, near Berwick, battle of, where 20000 of the Scots were slain, and only 15 English, July 19, 1333. Edward king of England complained to the courts of France, Rome, and Flanders, of the hostilities which the Scots had committed; sent ambassadors to demand homage of David de Brus; and this being peremptorily refused, denounced war against him as a contumacious vassal. He sent for reinforcements to Aquitaine and Ireland; and appointed the rendezvous of his army at Newcastle upon Tyne, from whence he marched, in the beginning of May, to besiege Berwick, which he invested immediately, fixing his headquarters at Tweedmouth. The Scots had supplied this frontier with a strong garrison, under two of their bravest commanders, namely, sir William de Keith, governor of the town, and Patrick Dunbar, earl of Marche, guardian of the castle. These leaders made such a gallant defence, ruining the works of the besiegers in repeated sallies, that Edward, after having made several unsuccessful at-

tacks, resolved to change the siege into a kind of blockade by sea and land, in order to reduce them by famine; and in the mean time to penetrate with part of his army into the heart of Scotland, in hope of bringing the guardian to a decisive battle. He accordingly left the conduct of the siege to Baliol, and entering that country, advanced as far as Edinburgh, without any other opposition than that of being incommoded in his march, by the detachments of Archibald Douglas, now guardian of the realm, who wisely avoided a general engagement. After a tedious and fruitless progress through a barren country, from which the natives had conveyed their most valuable effects to inaccessible fastnesses, he returned to Berwick, the siege of which he now resumed with redoubled vigour; nor could he be diverted from his purpose, though Douglas marched into England, and even invested the castle of Banborough, in which the queen resided. Edward knew the place was well fortified, and the Scots unprovided with implements for a siege; he therefore considered the attempt as an artifice to draw him from Berwick, which he was resolved to reduce at all events. The Scots continued to make an obstinate defence, until their fortifications were almost entirely demolished; and then they demanded a truce of five days, on condition of surrendering the place, if it should not be relieved before the expiration of that term. Sir William de Keith was furnished with a safe-conduct, by virtue of which he repaired to Banborough, at that time beleaguered by Douglas, whom he persuaded to march to the relief of the place: but the truce expiring before he could approach the English army, Edward demanded the immediate surrender of the town and castle; and Seton, the deputy governor, starting some difficulties, he ordered that officer's two sons, whom he received as hostages, to be hanged before the walls, in sight of their father. This at least is the account given by the Scottish writers, which however is denied by all the English historians, who affirm that the Scottish army came in sight before the truce was expired; and therefore Edward could have no pretence for demanding a surrender. Douglas, with a numerous army, arrived at Bothville, near Halidowne hill, on Monday the nineteenth day of July, and drew up his forces in four divisions, commanded by the principal nobility of Scotland. The English were posted upon
the

the hill, drawn up also in four battalions, flanked with archers, for which the kingdom was always famous. In this situation did Edward wait the attack of the enemy, who began to ascend the hill with great impetuosity about the hour of vespers. But they met with such a reception as in a little time checked their career. They were soon out of breath, in consequence of running up the hill in armour; they were terribly galled by the arrows of the English; they suffered severely from the huge stones that were rolled down upon them incessantly; and their general being killed by a spear, they fell into disorder, and dejection. Edward perceiving them fatigued, broken, and dispirited, ordered John lord Darcy to attack them in flank, with a body of light-armed foot from Ireland; while he himself fell in among them, at the head of a choice brigade of men at arms, and archers on horseback. The men at arms in the Scottish army had dismounted to begin the attack; and now, when they might have made some defence on horseback, they found themselves deprived of their horses, by the Jacques who had fled with them from the field of battle. All resistance was now at an end; the enemy were surrounded, and an horrible carnage ensued. Twenty thousand Scots fell in the battle, and in the pursuit; and almost the whole nobility of the kingdom were either killed or taken. This great victory was obtained at the expence of one knight, one esquire, and thirteen foot soldiers, who lost their lives; and the town and castle of Berwick surrendered next morning.

HALL, in architecture, a large room at the entrance of a fine house, and palace. In the houses of ministers of state, magistrates, &c. it is the place where they dispatch business, and give audience. In very magnificent buildings, where the hall is larger and loftier than ordinary, and placed in the middle of the house, it is called a saloon.

HALL, in old writers, is also used for a mansion-house; and to this day, in many parts of the kingdom, gentlemen's seats are called halls.

HALLAGE, a fee or toll paid for cloth brought to be sold in Blackwell-hall, London.

HALLELUJA, a word signifying, praise the Lord. The singing halleluja was a sort of invitatory, or call to each other, to praise the Lord. St. Austin says, that in some churches, it was sung only

on Easter-day, and the fifty days of Pentecost; but that even in those churches where it was most in use, it was never used in the time of Lent. The fourth council of Toledo forbids the singing it not only during Lent, but on all other days of fasting; and by the same council it is appointed to be sung after the reading of the gospel. It was also sung at funerals, as St. Jerom informs us in his epitaph of Fabiola, where he speaks of the whole multitude singing psalms together, and making the golden roof of the church shake with echoing hallelujas.

HALO, in physiology, a meteor, in form of a luminous ring, or circle, of various colours, appearing round the bodies of the sun, moon, or stars. That round the moon is the most usual, and is called *corona*, crown. Naturalists conceive the halo to arise from a refraction of the rays of light in their passing through the fine rare vesiculae of a thin nubecula, or vapour, towards the top of our atmosphere; which account they confirm hence, that a quantity of water being thrown up against the sun, as it breaks and disperses into drops, it forms a kind of halo, or iris, exhibiting the colours of the natural rainbow. M. Huygens supposes halos, or circles round the sun, to be formed by small round grains of a kind of hail, made up of two different parts, one of which is opaque, and inclosed in the other, which is transparent; which is the general structure observed in hail. After the same manner he accounts for the parhelia; only that he imagines the icy grains of an oblong figure, and rounding at the ends, like cylinders with round convex tops. Where some of these cylinders are in an erect position, the circle they form will be white, by reason of the reflection of the rays of the sun on the surface of these cylinders. From the same hypothesis, he accounts for the coloured halos, and parheliæ.

HALTER-GAST, among farriers, an excoriation of the pastern, occasioned by a horse's endeavouring to scrub the itching part of his body near the head and neck, when one of his hinder feet entangling in the halter, he sometimes receives very dangerous hurts in the hollow of his pastern by his struggling to disengage himself. For the cure of this, take linseed oil and brandy, of each an equal quantity; shake them together in a bottle till they are well mixed, and anoint the place morning and evening, having cut first away the hair; but

but care must be taken to keep the foot very clean.

HALTING, among farriers, a limping or going lame, an irregularity in the motion of a horse, arising from a lameness in the shoulder, leg, or foot, which makes him spare the part, or use it timorously.

HAM, in anatomy, the part behind the knee.

HAM, in old law writers, a Saxon word used for a home or dwelling place, for a borough and a village, and also for a little narrow slip of meadow.

HAM, in cookery, the leg and thigh of a hog seasoned and dried.

* **HAMADRYADES**, in fabulous history, nymphs whose fate depended on certain trees, with which they were born and died; they were supposed to be inseparably united to these trees, and therefore are represented as thankful to those who preserved them from death; while those who paid no regard to their supplications in behalf of the trees on which their lives depended, were punished for their cruelty. It was chiefly with the oaks that they had so near a relation.

* **HAMBURG**, a large city and port-town of Germany, in the circle of Lower Saxony, and duchy of Holstein. It is built partly on islands and partly on the continent, on the north side of the river Elbe, the islands have a communication with each other by bridges, and the tide flows through the canals which part them. The town lies so low, that the houses are very liable to be damaged by inundations; however, it gives a natural strength to the place, which is improved by good walls, and regular fortifications. An old wall and ditch divides it into two parts, called the Old and New town. The buildings are generally of brick, and very high, and the streets wide. They have several good churches. It was formerly an archbishop's see. Most of the churches have fine steeples, and are very rich in revenues and ornaments. The city is well provided with hospitals and charitable foundations for cripples, aged people, orphans, disabled seamen, and their families. The public buildings are none of them very extraordinary, for the town-house is more commodious than beautiful, and the exchange is a low mean structure, and very old. The four gates of the city are strong, and extremely well built, and the fortifications are very beautiful, having the advantage of walks that run round the ramparts, which are planted with trees on both sides. There are six spacious market-

places, well supplied with all manner of provisions. The other buildings most worthy of notice are, the new workhouse, the new spin-house, the arsenal, the dock, the opera-house, and the two public libraries. From the top of St. Nicholas's steeple, there is a full prospect of the whole city. Hamburg is governed by four burgomasters, twenty schepins or aldermen, twelve common-council-men or senators, who constantly attend the service of the city, which is free and imperial.

The inhabitants are affable and polite, especially to strangers, and being very rich, they are expensive in their public entertainments. The walks about the town are very pleasant, and much frequented by the inhabitants; but they can continue there only till the gates are shut, which is at sun-set. They are great lovers of music, especially in the churches, where they have variety of instruments. The situation of Hamburg renders it convenient for trade, because ships of burthen can come up to the merchants doors. The tide flows sixteen miles higher up the river than Hamburg, which is ninety miles from the sea. The merchants flock hither from all parts of Europe, from whence their goods are distributed all over the empire. They have all sorts of wines and spirits from France, Spain, and Portugal, and have manufactures of their own, such as printed linen, velvet, gold and silver lace, and loaf sugar; likewise they brew and sell vast quantities of beer, which is transported into all the neighbouring provinces. The bank of Hamburg is one of the best and safest in Europe, and is under the direction and management of four of the most eminent citizens. The wealth and trade of this city encreases daily, for they send one year with another seventy ships to Greenland, and are said to have in all five thousand sail. There is a prodigious number of Jews in this city, to whom they allow great privileges, as well as to all strangers, but especially to the English factory, who have a large building of their own, with a very handsome chapel. They are exempted from the jurisdiction of the city courts, and all causes, whether criminal or civil, are determined and judged by themselves. The king of Denmark, as duke of Holstein, sometimes lays claim to the dominion of this city, and extorts money from them. Their liberties are also sometimes endangered by disputes with the Roman Catholics, in whose behalf the emperor sometimes interposes, as

H A M

he did in 1708, when he sent a body of troops into the city, and obliged the citizens to buy their peace. They are rigid Lutherans, and tolerate no other sect, except in the chapels of foreign ministers and factories. It is thirty-five miles north-west of Lunenburg. Long. 9. 53. E. Lat. 53. 45. N.

* **HAMDEN**, or **HAMPDEN** (**JOHN**) a celebrated patriot, descended from an ancient family at Hamden, in Buckinghamshire. He was the son of John Hamden, esq; and was born at London, in the year 1594. He was educated at Magdalen college, Oxford, whence he removed to the inns of court, where he made a considerable progress in the study of the law; and then retiring to his estate in Buckinghamshire, was chosen to serve in the parliament which began at Westminster, on the 5th of February, 1625-6, and all the succeeding parliaments during the reign of king Charles I. In 1636 he became universally known by his refusal to pay ship-money, as an illegal tax; for which he was prosecuted in the Exchequer; and when the long parliament began, "the eyes of all men," says the lord Clarendon, "were fixed upon him as the pilot that must steer the vessel through the tempests and rocks which threatened it; for his reputation of honesty was universal, and his affections seemed so publicly guided, that no corrupt or private ends would bias them." However, on the 3d of January, 1641-2, the king ordered articles of high treason, and other misdemeanors, to be prepared against the lord Kimbolton, Mr. Hamden, and four other members of the house of commons, and went to that house to seize them; but they were then retired; and Mr. Hamden afterwards made a speech in the house to clear himself of the charge. In the beginning of the wars, he undertook the command of a regiment of foot, and performed the duty of a colonel with great prudence and bravery; was of great service to the parliament in the battle of Edgehill; but received a mortal wound in an engagement with prince Rupert, in Chalgrave Field, in Oxfordshire, and died on the 24th of June, 1643. Such was his popularity, and the respect paid to his merit, that his death was almost as much lamented by the king's party as the parliament's.

HAMLET, **HAMEL**, or **HAMPEL**, is a small village, or part of a parish.

HAMMER, a well known tool used

H A N

by mechanics, consisting of an iron head, fixed crosswise upon a handle of wood.

HAMMOCK, among sailors, a piece of canvas about six feet long, and three feet wide, drawn together at the two ends, and hung horizontally under the deck for the sailors to sleep in.

* **HAMPSHIRE**, or county of Southampton, a maritime county, having the British Channel on the south, Surry and Suffex on the east, Dorsetshire and Wiltshire on the west, and Berkshire on the north. It is in the diocese of Winchester, and is about fifty miles in length, thirty in breadth, and one hundred and seventy in circumference. It contains one city, twenty market-towns, two hundred and fifty-three parishes. It sends twenty members to parliament, two for the county, eighteen for the corporations. The soil of this county is very fruitful in corn, rich in pastures, and in many places well wooded; however, much of their arable land is stony, which some think rather helps than hurts the corn, and protects it, when tender, from parching and blasting winds. The air is generally very wholesome; for there cannot be better or sweeter than about the Downs of Andover and Winchester. It must be owned, that the air of those parts near the sea, where the grounds are overflowed, is not so salutary. Hampshire is well watered with rivers and brooks, of which the Stour, the Avon, the Test, the Alre or Itching, and the Hamble, are the chief. These rivers supply the country with good meadow land and fish, and the sea affords great plenty of the latter, such as soles, lobsters, flounders, &c. about Southampton and Portsmouth. The horned cattle here are much the same as in other parts of England, but the sheep, hogs, and bees are better than in most other countries. The Downs feed a great number of sheep, the flesh of which is sweet and pleasant, and their fleeces large and good. The Hampshire hogs are generally allowed to make the best bacon in England. This perhaps may be owing to the quantity of acorns which they feed upon in the proper season, and become fleshy and fat, without cost or care. The bees in this country produce a great quantity of honey.

HAND, *Manus*, in anatomy; the last part of the upper extremity is divided into the carpus, metacarpus, and fingers, or into the inside, hollow, or palm, and into the outside or back of the hand; each of these consist of several bones, connected

ned by ligaments, guarded with cartilages, and furnished with muscles, arteries, veins, and nerves.

HAND, in the manège, a measure of four inches, or of a clinched fist, by which the height of a horse is computed. Thus a horse of war should be sixteen hands high.

HAND-BREADTH, a measure of three inches.

Imposition of HANDS, the ceremony of laying the hands on the head of a person to be ordained.

HANDS, in heraldry, are borne in coat armour dexter and sinister, that is, right and left, expanded or open. These are the most necessary parts of the human body, as they serve to express all sorts of actions, and even our very thoughts and designs; thus joining of hands is an universal token of friendship, and clapping of hands a general mark of applause.

* **HANDEL (GEORGE FREDERIC)** an illustrious master in music, was born at Hall, in Upper Saxony, the 24th of February, 1684, where his father practised physic and surgery with great success. He was so fond of music from his infancy, that his father, who intended him for the civil law, strictly forbade his meddling with musical instruments of any kind; but finding means to get a little clavicord privately conveyed to a room on the top of the house, he amused himself with it, while the family were asleep. When under seven years of age, he went with his father to the duke of Saxe-Weisenfels, where it was impossible to keep him from harpsichords and other instruments. One morning he was playing on the organ after the service was over, and the duke being in the church, was so struck with his manner, that he asked his valet de chambre, who was Handel's brother-in-law, who was at the organ? The valet answered, that it was his brother. The duke ordered him to be called, and after making proper inquiries, expostulated very seriously with his father, and prevailed on him not only to grant him a toleration for music, but to provide him a master. On his return to Hall, his father placed him under Zuckaw, organist to the cathedral, and a person of great abilities in his profession. He was charmed with the amazing genius of his pupil, who was soon capable of supplying his place, whenever he chose to be absent, and at nine years of age, began to compose the church-service for voices and instruments, and from that time actually composed a

service every week for three years successively. Having far surpassed his master, he, in 1698, went to Berlin, where the opera was in a flourishing condition, under the encouragement of the first king of Prussia, and he had not been long there before he became known to that prince, who frequently sent for him, made him large presents, and offered to send him into Italy; but he declined accepting of it, and soon after went to Hamburg, where the opera was also in high request; when his father dying, and leaving his mother in narrow circumstances, he procured scholars, and obtained some employment in the orchestra, and thus, instead of a burthen, proved a great relief to her. He had here a dispute with one of the masters for the first harpsichord, and had it determined in his favour. This honour, however, had like to have cost him dear; for his antagonist resenting his being obliged to yield to such a stripling, made a push at him with a sword, as they were coming out of the orchestra, and would infallibly have pierced his heart, had he not before, without design, put his music-book in his bosom. Handel here became composer to the house, when *Almeria*, his first opera, was received with such applause, though he was then not much above fourteen years of age, that it ran thirty nights without interruption. This encouraged him to make others, and also a considerable number of sonatas, which are lost. He here contracted an acquaintance with several persons of quality, among whom was the prince of Tuscany, brother to the grand duke, who was very desirous that Handel should return with him to Florence, and promised that no convenience should be wanting; but Handel, who had from his childhood a strong spirit of independence, thanked him for the offer of a favour which he did not chuse to accept, though he resolved to go as soon as he could make a purse sufficient to support his expences. He soon after went to Florence, where, at eighteen years of age, he composed the opera of *Roderigo*, for which he was presented with an hundred sequins, and a service of plate. After about a year's stay in that city, he went to Venice, where he was first discovered at a masquerade, while playing on a harpsichord in his visor; for it is said, that Scarlatti happening to be there, affirmed it could be none but the famous Saxon or the devil. He there finished his *Agrippina*, which was performed twenty-seven nights successively.

From thence he went to Rome, where his arrival was no sooner known than he received polite messages from persons of the first distinction, and among his greatest admirers was cardinal Ottoboni, at whose court he met with the famous Corelli, with whom he became well acquainted. In short, he resided in Italy six years, during which he composed abundance of music, and some in almost every species of composition; but these early fruits of his genius are not to be met with. Handel now returned to Germany, and stopping at Hanover, met with Steffani, with whom he had been acquainted at Venice, and who was master of the chapel to king George I. when only elector of Hanover. He then went to Dusseldorp, where the elector Palatine was highly pleased with him, and at parting made him a present of a fine set of wrought plate for a desert. He arrived in London in the winter of 1710, where he was soon honoured with marks of the queen's favour; and the nobility being impatient to have an opera from him, he composed *Rinaldo*, in which the famous Nicolini sang. In about a twelvemonth he returned to Hanover; but, in 1712, he obtained leave of the elector to make a second visit to England, on condition of his returning within a reasonable time. However, the encouragement he received from the nobility, and queen Anne's settling upon him, for life, a pension of two hundred pounds per annum, made him forget his obligations to return to Hanover; so that when the king came over, in 1714, he did not dare to appear at court; but his noble friend, the baron Kilmanseck, being here, he, with some other of the nobility, persuaded the king to form a party on the water, and Handel was desired to prepare some music for the occasion. This he did, and conducted it himself. His majesty's surprize was equal to his pleasure, and enquiring who it was, the baron presented him to his majesty as one who was too sensible of his fault to attempt to excuse it, on which he was not only restored to favour, but the king was pleased to add a pension for life of two hundred pounds additional to that granted him by queen Anne.

Handel was now settled in England, where he had for many years the management of the theatre in the Hay-market, and where he wrote those admired pieces of music that will never cease to charm, while man has an ear for harmony. In 1751, a gutta serena deprived

him of sight, but his faculties remained in their full vigour almost to the hour of his dissolution, which happened on the 14th of April, 1759. An elegant monument has been erected to his memory in Westminster-Abbey.

HANDING the Sails, in the sea-language, the same as furling, which see.

HANDSPIKE, a sort of bar used to heave the windlafs round at the time of weighing the anchor. It is also used as a lever on many occasions.

HANKS, in the marine, certain wooden rings fixed upon the stays of a ship, to which the stay-sails are fastened in different places, as a curtain is fastened to the rings which run upon its rod.

* *HANOVER*, a city of Lower Saxony, and capital of the king of Great Britain's German dominions. It is seated on the river Leinâ, in a very pleasant fruitful plain, where the elector George I. had his residence, before he ascended the throne of Great Britain. It is surrounded by a wall and other works of no great strength. The palace, or castle, of the elector has but a mean appearance outwardly, but within it is magnificently furnished. The town is generally ill-built, and the best structure is the Roman catholic church, which was granted to the papists, when the father of George I. was made an elector; but the established religion is the Lutheran. The country is governed in the same manner as if the elector was present, and there are the same number of gentlemen, pages, domestics, and guards. They have French plays three times a week, with concerts, assemblies, and balls. The elector is absolute here, and in the rest of his German dominions. He is arch-treasurer of the empire, and his revenues are computed at four hundred thousand pounds a year. His dominions, besides Hanover, are the duchies of Lunenburg and Zell, Bremen and Verden, and the duchy of Lawenburg; the greatest part of which lie between the rivers Weser and Elbe, and extend near two hundred miles in length from south-east to north-west, and are from one hundred and fifty to fifty in breadth. These bounds include several little territories and states, besides imperial cities. Out of these dominions he is able to raise about thirty thousand men. The country is pretty much over-run with wood. It is fifteen miles south-east of Neustadt, twenty-five south-west of Zell, and fifteen north-west of Brunswick. Long. 10. 5. E. Lat. 52. 5. N.

HANPER, HANAPER, or HAMPER, an office of the chancery, answering to the fiscus of the Romans.

HANSE, or HANS, a company of merchants united for the promotion and advantage of trade.

HANSE-TOWNS, port-towns of Germany, of which Lubec and Hamburg were the chief. They were formerly all of them imperial cities, confederated for their mutual defence, and the protection of their trade.

HAPPINESS, among philosophers, consists in the enjoyment not only of the goods of the body, as health, strength, neatness, decency, &c. but also of the more refined goods of the mind, as knowledge, memory, taste, and especially the moral virtues, magnanimity, fortitude, benevolence, &c.

HARANGUE, a speech made by an orator in public.

It is frequently used for a pompous and prolix declamation.

HARBINGER, an officer of the king's household, having four yeomen under him, who ride a day's journey before the court, when it travels, to provide lodgings, &c.

HARBOUR, a place where ships may ride safe at anchor, chiefly used in speaking of those secured by a boom and chain, and furnished with a mole. See *Boom*, *Chain*, and *Mole*.

HARDENING, the act of communicating a greater degree of hardness to a body than it had before.

Steel and iron are hardened and tempered divers ways, as by the hammer; quenching it, when hot, in cold water; case-hardening, &c.

To harden and temper English, Flemish, and Swedish steel, they heat it pretty high, then suddenly quench it in water to make it very hard: Spanish and Venice steel need only a blood-red heat, and then be quenched. Sometimes they rub ground indigo and fallad oil upon it with a woollen rag, while it is heating, and let it cool of itself.

If the steel be too brittle for an edge, spring, &c. bring it down thus: take a piece of grind-stone or whet-stone, and rub hard the work on it to take the black scurf off, and brighten it; then let it heat in the fire, and it will gradually change colour, coming first to a light goldish colour, then to a darker golden colour, and at last to a blue colour: choose which of these the work requires, and quench it suddenly in water.

Case-HARDENING is a lesser degree

of steel-making, and performed by baking razors, files, knife-blades, &c. in a kind of oven, and laying over them a strata of powdered charcoal, hoofs, horns, &c. so as to exclude the air; and thus by baking to give a coat of steel to these instruments some depth below their surface.

Others cover the iron or steel all over with a composition of an equal quantity of powdered horn, bay-salt, and stale urine, or white wine vinegar, well mixed together, and then wrap it up in loam or plate iron, and bring the whole to the fire to a blood-red heat, and no higher; and lastly, take it out and quench it.

HARDENING of Timber. The Venetians are famous for the soundness of their ships, which do not rot as those of other nations, but will endure many times the common period. Tachenius tells us, that the whole secret of this consists in the manner of their hardening of their timber intended for this service; and that this is done by sinking it in the water while green, and leaving it there many years. This prevents the alkali, or that salt which furnishes the alkali in burning, from exhaling afterwards; and by this means the timber becomes almost as incorruptible as stone. It is evident that the exhaling of this salt, and the rotting of wood, have some very great connection with one another, since, the more sound any piece of timber is, the more salt it proportionably yields; and the wood which is rotten is found on trial to contain no salt at all. See the article *Timber*.

HARDNESS, in philosophy, that quality in bodies, whereby their parts mutually cohere together, so as not to give way to an external impulse, nor yield inwards, without breaking. Hardness in this sense is in contradistinction to softness.

HARDS, or HURDS, the coarser part of hemp or flax, separated from the fine.

HARDY SHRUBS, among gardeners, those which endure the austerity of the winter.

The two hardiest shrubs we are possessed of, are the ivy and box; these stand the severity of our sharpest winter unhurt, while other shrubs perish, and trees have their solid bodies split and torn to pieces. In the hard winter of the year 1683, these two shrubs suffered no injury any where; though the yews and hollies, which are generally supposed very hardy, were this winter in some places killed, and in others, stripped of their leaves, and damaged in their bark. Furze bushes were found to be somewhat harder than these, but they some-

sometimes perished, at least down to the root. The broom seemed to occupy the next step of hardiness beyond these; this lived where the others died; and where even this died, the juniper shrubs were sometimes found unhurt. This last is the only shrub that approaches to the hardiness of the box and ivy, but even this does not quite come up to them; for while they suffer nothing in whatever manner they are exposed, the juniper, though it bears cold well under the shelter of other trees, yet cannot bear the vicissitudes of heat and cold, insomuch that some juniper shrubs were found half dead, and half vigorous; that side which faced the mid-day sun, having perished by the successive thawings and freezings of its sap; while that which was not exposed to the vicissitudes of heat, had bore the cold perfectly well. Such shrubs as are not hardy enough to defy the winter, but appear half dead in the spring, may often be recovered by Mr. Evelyn's method of beating their branches with a slender hazel wand, to strike off the withered leaves and buds, and giving a free passage to the air to the internal parts. Where this fails, the method is to cut them down to the quick; and if no part of the trunk appears in a growing condition, they must be taken off down to the level of the ground. *Phil. Trans.* No. 165.

HARE, in zoology, an animal of the *lepus* kind, distinguished by its abrupt tail and black eyes. It greatly resembles the rabbit, but is larger, and somewhat longer, in proportion to its thickness; and its ears are remarkably long, being always in a position to receive the least sound, and moveable with surprising ease.

HARE-LIP, *Labium Leporinum*, in surgery. See *Lip*.

HARIOT, or **HERIOT**, in law, a due belonging to a lord, at the death of his tenant, consisting of the best beast, either horse, ox, or cow, which he had at the time of his death; and in some manors, the best goods, piece of plate, &c. are called harlots.

HARLEQUIN, a buffoon or merry-andrew; but is now used for a person of extraordinary agility, dressed in party coloured cloaths, the principal character in pantomime entertainments. See *Pantomime*.

HARMONICA, or as it is often improperly called, **ARMONICA**, among musicians, is an instrument composed of musical glasses.

A very curious instrument of this kind, was made by the inventor Mr. Tho. Dobb of St. Paul's-church-yard; and, being the most perfect as well as finest toned instrument in use, may with great propriety be considered as an improvement in music.

The instrument has this peculiar property, that it never varies or goes out of tune; and is so constructed as to play a thorough bass.

It is best adapted to flow music; for in that is most discovered those exquisite fine tones peculiar to it: and which, if run over in a hurry, would not be so distinctly heard; though by a proper execution every thing might doubtless be done on this that can be formed on any other instrument.

HARMONICAL ARITHMETIC, that part of arithmetic which considers musical intervals, expressed by numbers, in order to our finding their mutual relations, compositions, and resolutions.

HARMONICAL COMPOSITION, in a general sense includes both harmony and melody, that is, of music or songs; both in a single part, and in several parts.

HARMONICAL INTERVAL, in music, denotes the difference of two sounds, which is agreeable to the ear, whether in consonance or succession; and are, therefore, the same with concord.

HARMONICAL PROPORTION. See the article *Proportion*.

HARMONICAL SERIES, a series of many numbers in continual harmonical proportion. Thus if there are four or more numbers, of which every three immediate terms are harmonical, the whole will make an harmonical series: such is 30 : 20 : 15 : 12 : 10. Or, if every four terms immediately next each other are harmonical, it is also a continual harmonical series, but of another species, as 3, 4, 6, 9, 12, 36, &c.

HARMONICAL SOUNDS, an application given by Mr. Sauveur, to such sounds as always make a determinate number of vibrations, in the time that one of the fundamentals, to which they are referred, makes one vibration.

HARMONICS, *Harmonica*, a division of the ancient music. It considers the differences and proportions of sounds with respect to gravity and acuteness, in contradistinction to rhythmica or metrica.

HARMONY, in music, the agreeable result of an union of several musical sounds, heard at the same time.

As a continued succession of musical sounds produces melody, so a continued combination of them produces harmony.

Harmony, strictly taken, denotes consonance, and so is equivalent to symphony. The ancients seem to have been entirely unacquainted with harmony, the soul of modern music. We have instances indeed of their joining several voices or instruments in consonance; but they were either unisons or octaves in every note; and so all performed the same melody, and constituted one and the same thing.

When the parts differ not in the tension of the whole, but in the different relations of the successive notes; it is this that constitutes the modern harmony.

The proper ingredients of harmony are concords; and all discords, at least in the primary and mutual relations, are absolutely forbidden. It is true, discords are used in music, only to set off the concords by their contrast.

Harmony is divided into simple and compound. Simple is that where there is no concord to the fundamental above an octave. The ingredients of simple harmony are the seven simple original concords, of which there can be but eighteen different combinations that are harmony, as in the following table.

Fifth Oct.	2.	Third g Oct.	4.
Fourth Oct.	3.	Third / Oct.	5.
Sixth g Oct.	3.	Sixth / Oct.	5.
Third g 5th	4.	Third g 5th Oct.	
Third / 5th	10.	Third / 5th Oct.	
Fourth 6th g	3.	Fourth 6th g Oct.	
Third g 6th g	12.	Third g 6th g Oct.	
Third / 6th /	5.	Third / 6th / Oct.	
Fourth 6th /	15.	Fourth / 6th / Oct.	

Compound harmony adds to the simple harmony of one octave that of another octave. The variety of this is easily found out of the combinations of the simple harmonies of several octaves.

Harmony may also be divided into that of concords, where nothing but these are admitted; and into that of discords, where they are intermixed with concords.

HARMONY is sometimes applied to a single voice, when sonorous and soft; or to a single instrument, when yielding a very agreeable sound.

HARMONY also denotes a certain agreement between the several parts of a discourse, which renders the reading thereof agreeable.

HARMONY, in architecture, agreeable relation between the parts of a building.

HARMONY, in painting, both in the composition and colours of a picture; the former denotes the connexion between the figures, with respect to the subject of the piece; in the colouring it denotes the agreeable mixture of different colours. M. de la Chambre derives the harmony of colours from the same proportions as that of sounds. On this principle he lays down green as the most agreeable colour corresponding to the octave; red to a fifth; yellow to a fourth, &c.

HARMONY of the Spheres, a sort of music much talked of by many of the philosophers and fathers, supposed to be produced by the sweetly tuned motions of the stars and planets.

Pre-established HARMONY, a celebrated system of M. Leibnitz, whereby he accounts for the communication between the soul and body.

HARNESS, the furniture put upon a horse to draw in a coach, or other wheel carriage.

HARNESS-GALLS, swellings or soreness on the breast of coach-horses, occasioned by the galling of the harness, especially in rainy.

To cure this, first shave off the hair about the fore very close, and rub the whole breast with a lather of water and black soap; then wash that part of the breast which is usually covered with the petrel, with salt-water, suffering it to dry of itself. If the hardness of any part of the harness occasions the galling, take it away, or cover it with little bolsters.

HARP, a musical instrument of the string-kind, of a triangular figure, and held upright between the legs to be played upon with the fingers or nails.

Bell-HARP, a musical instrument of the string-kind; thus called from the common players upon it swinging it about as a bell on its bias.

It is about three feet long; its strings, which are of no determinate number, are of brass or steel wire, fixed at one end, and stretched across the sound-board, by screws fixed at the other end. This may perhaps be the lyra or cythara of the ancients; but we find no mention of it under the name it now bears, which must be allowed to be modern.

HARPIES, *Harpyæ*, in antiquity, rapacious impure sorts of monsters, of the bird-kind, described by Virg. *Æn.* III. The ancients looked on the harpies as a sort of genii.

*HAR-

* **HARPIES**, in fabulous history, the daughters of Oceanus and Terra. They were called Celeno, Aello, and Ocypete, and are said to have the faces of virgins, the ears of bears, the bodies of vultures, with human arms and feet, and long claws. Phineus, king of Arcadia, having revealed the mysteries of Jupiter, was so tormented with their devouring every thing that was set before him, that he was ready to perish with hunger, till the sons of Boreas, who attended Jason in his expedition to Colchis, delivered the king, by driving these monsters to the islands called Echinades.

HARPINEER, or **HARPONEER**, the person who manages the harping-iron.

HARPING IRON, or **HARPOON**, a large spear or javelin, made of forged iron, and five or six feet long; it is fastened to a line, and used in the whale fishery.

* **HARPOCRATES**, in pagan theology, the son of Isis, and esteemed the God of Silence. He was represented under the form of a young man, half-naked, crowned with an Egyptian mitre, holding in his left hand a cornucopia, and a finger of the other placed on his lips as recommending silence.

A late author observes, that the Romans, who borrowed this image from Egypt, quite mistook its meaning, and maintains that Harpocrates was the Horus, or emblematical statue, which denoted the peace or repose of winter; that the cornucopia, among the Egyptians, signified plenty; and the finger placed on the lips, denoted moderation and temperance necessary to enjoy the blessings of providence in a right manner.

HARPSICHORD, the most harmonious of all the musical instruments of the string-kind. It is played on after the manner of the organ, and is furnished with a set and sometimes with two sets of keys; the touching or striking of these keys move a kind of little jacks, which also move a double row of chords or strings, of brass or iron, stretched over four bridges on the table of the instrument.

HARRIER, a kind of hound, endowed with an admirable gift of smelling, and very bold in the pursuit of his game.

There are several kinds of harriers, some being for the hare, the fox, the wolf, hart, weasel, badger, &c.

HARROW, in agriculture, an instrument used by husbandmen to break the clods of earth, and to draw the ground over

the seed when sown. It is a sort of wooden drag, made in form of a square, with large iron teeth, or tines, not unlike those of a horse.

HART, a stag, or male deer, in the sixth year. See *Stag* and *Cervus*.

* **HARTFORD**, the county-town of Hertfordshire, where the assizes are held. It is a corporation, governed by a mayor, a high-steward, a recorder, nine aldermen, a town-clerk, ten capital burgessees, and sixteen assistants, besides two serjeants at mace. The chief commodities of the market are wool, wheat, and malt, and it sends of the latter a great quantity to London. It had a castle, which is now demolished, and five churches, whereof there are only two standing, which are All Saints and St. Andrew's. This town is pretty well built, but is not in so flourishing a condition as it was before the great road was turned through Ware. It is twenty-one miles north of London. Long. o. 5. W. Lat. 51. 45. N.

* **HARTFORDSHIRE**, a county in England, bounded by Essex on the east, by Middlesex on the south, by Buckinghamshire and Bedfordshire on the west, and by Cambridgeshire on the north. It is about twenty-eight miles in length, and nearly the same in breadth, and contains one hundred and twenty parishes, eight hundreds, and about sixteen thousand houses. The soil of this county being chiefly a chalky earth, produces all sorts of grain in great plenty; but the vale of Ringtail, which crosses the northern part of this county, yields the choicest wheat and barley, which are greatly esteemed in London. The pastures are but indifferent, being in some places over-run with fern and broom, and in the low grounds with rushes and moss. The air is clear, serene, and healthful, which has occasioned several fine seats to be built in this county. The rivers yield variety of fish. The New River in this county, was begun and happily completed by sir Hugh Middleton, citizen and goldsmith, of London, by bringing springs from Arnwell to the north parts of London, and the proprietors of it enjoy a great revenue, which arises therefrom. There are some medicinal waters in this county, as at Barnet, Northall, Cutley, and Watton.

HART-ROYAL, one that has been hunted by the king or queen, and escaped with life; in which case proclamation is usually made, that none kill or offend him, as being a hart-royal proclaimed.

HART'S

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HART's HORNS, *Cornua Cervi*, in pharmacy, the whole horns of the common male deer, as separated from the head, without farther preparation.

The chemical analysis of hart's horn is sufficiently known: it yields a water highly impregnated with a volatile salt, which is called spirit of hart's horn, with a fetid oil, and a volatile salt by the common distillation in a retort. The remainder in the bottom of the retort, after the distillation is finished, is black; but on being calcined in an open fire, it becomes white and friable, and is what is kept in the shops under the name of burnt hart's horn. Besides these preparations, we use the thin shavings of the horns, which, on long boiling in water, become a jelly: this jelly is nutritive and strengthening; it is sometimes given in diarrhoeas; but a decoction of burnt hart's horn in water is more frequently used for this purpose, and is what is called hart's horn drink.

The salt of hart's horn is a great sudorific, and is given in fevers of many kinds with great success; the spirit has the same and all the other virtues of volatile alkalies, and is used to bring people out of faintings by its pungency, on holding it under their nose, and at the same time pouring some drops of it in water down the person's throat.

HARVEST, the time or season that the corn is ripe, and fit to be reaped and taken into barns.

HARVEST-FLY, in zoology, a large four-winged fly, of the cicada kind, very common in Italy, and erroneously supposed to be a grass-hopper.

* **HARVEY (WILLIAM) M. D.** an English physician, celebrated for the discovery of the circulation of the blood, was born at Folkston, in Kent, on the 2d of April, 1578. He studied at Cambridge and at Padua, and at twenty-four years of age became doctor of physic and surgery in the last mentioned university; soon after which returning into England, he was incorporated doctor of physic in Cambridge, practised physic in London, and was afterwards appointed lecturer of anatomy and surgery, in the College of Physicians, where, in a course of lectures in anatomy, he opened his discovery of the circulation of the blood, which, after a variety of experiments publicly exhibited, he communicated to the world in his *Exercitatio anatomica de Motu Cordis & Sanguinis*. In 1632, he was made physician to king Charles I. as he had been to king James I. and ad-

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hering to the royal cause on the breaking out of the civil wars, attended his majesty at the battle of Edgehill, and thence to Oxford, where he was incorporated doctor of physic, and elected warden of Merton college, but the garrison of that city afterwards surrendering to the parliament, he returned to London, where, in 1651, he published his book intitled *Exercitationes de Generatione Animalium*, a very curious work; but it would have been more so, had not his papers been destroyed during the civil wars; for though he had an express order from the parliament to attend his majesty upon his leaving Whitehall, yet his house in London was, in his absence, plundered of all the furniture, and a great number of anatomical observations, relating especially to the generation of insects, were taken away, a loss which he lamented several years. On Michaelmas day, 1654, Dr. Harvey was chosen president of the College of Physicians in his absence; but his age and weakness were so great, that he could not discharge the duty of that office, and therefore desired them to chuse Dr. Pringle. As he had no children, he settled his paternal estate upon the College. He had three years before built a combination-room, a library, and a museum; and, in 1656, he brought the deeds of his estate and presented them to the college. He was then present at the first feast instituted by himself to be continued annually, together with a commemoration-speech in Latin, to be spoken on the 18th of October, in honour of the benefactors to the College, he having appointed a handsome stipend for the orator, and also for the keeper of the library and museum, which are still called by his name. He died on the 3d of June, 1657, and was interred at Hempsted, in Hertfordshire, where a monument is erected to his memory.

HASTA, among medallists, a kind of javelin, not shod or headed with iron; or rather an ancient sort of scepter, longer than ordinary, occasionally given to all the gods.

HASTATED LEAF, among botanists, one resembling the head of an halbert.

* **HASTINGS**, battle of, where king Harold was slain, Oct. 14, 1066. The duke of Normandy, being then at Hastings, and perceiving that Harold was determined to give him battle, advanced a little way, and took post in an advantageous situation, where he could have room

to draw up his army in order of battle ; and at this juncture he abated a little of his former pride and ferocity. Conscious of the greatness of that stake which he was going to hazard, he sent a monk to Harold, offering to refer their dispute to the determination of the pope, to quit the kingdom, provided he would do him homage for the crown, or to decide the quarrel in single combat. To these propositions Harold replied, that he was not so simple as to submit to the arbitration of the pope, who had already declared himself a party ; that he scorned to hold the crown of England dependent on any prince whatever ; nor would he put his kingdom on the issue of a single combat, in which, though he should obtain the victory, he could reap no solid advantage. He therefore told the messenger that God would next day decide between him and his adversary. That night was spent in feasting and mirth by the English, who seemed confident of success ; while the Normans were employed in prayer and preparation for the battle. Next day, being the 14th of October, and the anniversary of Harold's birth, both armies appeared fronting each other, in order of battle. The vanguard of the English was composed of Kentishmen, in consequence of a privilege they enjoyed since the beginning of the Saxon heptarchy ; and Harold commanded the main body on foot, as much exposed as the meanest of his soldiers. The Normans were formed in three lines, the first of which was commanded by Montgomery and Fitzosborne ; Geoffrey Martel conducted the second ; and the duke headed the body of reserve, that he might occasionally sustain those who should need his assistance. The number of the Normans amounted to sixty thousand, including the archers and a strong body of cavalry armed cap-a-pee. The English were not so numerous, and consisted mostly of infantry armed with the target, battle-ax, spear, and scymitar. The Normans began the battle, advancing while they sung the ballad of Orlando, and letting fly a shower of arrows, which discomposed the English, who were not accustomed to such missiles ; nevertheless, they immediately closed their files, and gave the Normans such a warm reception, that they were obliged to retire a little and take breath. They repeated the attack, but could make no impression upon the English phalanx ; and, in a word, the battle was fought with equal valour on both sides, from seven in the

morning, till the afternoon, before an inch of ground was lost or won on either side, notwithstanding the various efforts and undaunted courage of both chiefs ; who exhibited repeated proofs of martial conduct, animated their men by their presence, admonition, and example. At length William put in practice a stratagem to which his army had been regularly trained ; he ordered a retreat to be sounded, and immediately his lines gave way, with such appearance of confusion, that the English believing them routed, forsook their ranks, and pursued with equal impetuosity and disorder. The duke of Normandy seeing their impenetrable column broke into small detachments, and dispersed about the field, ordered another signal to be made, at the sight of which his men formed again in an instant, and, surrounding the detached bodies of the English, made a terrible slaughter. Harold, enraged to see the victory thus wrested from his grasp, ran about the field with the utmost agility, rallying his men and reducing them to order, and at length took possession of a rising ground, where he was joined by such a number of the fugitives, that he soon found himself in a condition to make head against the enemy. The Normans advanced to attack them, and were repulsed. Had Harold taken this opportunity of retiring, he might have saved himself and the greatest part of his army, and, in all probability, the Norman would have been glad to make peace on equal terms : but, he could not bear the disgrace of leaving the field of battle to his adversary, and resolved to maintain his post till next day, when he would try his fortune in another engagement. William perceiving the night approaching, and unwilling to leave the battle undecided, made another desperate effort to dislodge the English, and in this attack Harold was shot dead with an arrow that pierced his brain. His troops seeing their gallant leader fall, were overwhelmed with consternation and despair, and fled immediately with the utmost precipitation ; while the Norman horse pursuing, as long as they could see their way, made a terrible carnage, without granting quarter to a single man. Yet a good part of the English army, favoured by the darkness, was saved by the conduct of Morcar and Edwin, who had fought with great courage, until the king and his two brothers were slain ; and then seeing the troops broken and dispirited, had yielded to the fortune of the day. In this long

and bloody engagement, which decided the fate of England, the victor lost six thousand men; but a much greater number of the vanquished were slain. William having thus attained the accomplishment of his wish, ordered his whole army to kneel and return thanks to heaven for the victory they had obtained: then he directed a tent to be pitched in the middle of the slain, and there he passed the remaining part of the night. In the morning his soldiers were employed in burying their dead countrymen, while the peasants of the neighbourhood were permitted to perform the same office to the English, who had lost their lives in the battle. Harold's body was so mangled and defaced that it could not be discovered, until a lady, whom he had kept as a mistress, distinguished it by some private mark, known to herself alone. Being thus recognized, it was sent, together with the bodies of his brothers, Gurth and Lewin, to their mother Githa, by whom they were honourably interred in the abbey of Waltham, which Harold himself had founded. Thus died Harold, in defence of English liberty, against the usurpation of foreign power; and if we accept the injury he did to Edgar Atheling, in excluding that young prince from the throne of his fathers, he seems to have been, in all respects, well qualified to wield the scepter with reputation to himself and happiness to his subjects; for he was humane, affable, intelligent; and his generosity was equal to his extraordinary courage. His death put an end to the dominion of the Anglo-Saxons in England, after it had continued above six hundred years, since the reign of Hengist, the first king of Kent.

HAT, a covering for the head; chiefly made of hair, wool, &c. worked, fulled, and fashioned to the figure of the head, and worn by the men throughout the western part of Europe.

Hats are said to have been first seen about the year 1400; at which time they became of use for country wear, riding, &c.

F. Daniel relates that, from the reign of Charles II. in 1449, the use of hats and caps is to be dated, which then began to take place of chaperons and hoods. In process of time the custom passed from the laity to the clergy, but this was looked upon as a crying abuse, and several regulations were published to prohibit it, enjoining them to keep to the use of chaperons made of black cloth with de-

cent cornets fastened to their hats, and this upon pain of suspension and excommunication. It is true; the use of hats is said to be of a longer standing among the ecclesiastics of Brittany by two hundred years; but these were no other than a kind of caps, whence arose the square cap now used in colleges.

Hats are made either of wool, or the hair of divers animals, as the beaver, hare, rabbit, camel, &c. The process is much the same in all. The finest hats are those made of the pure hair of the beaver.

HAT is also used in a figurative sense, to signify the dignity of a cardinal, or a promotion to that dignity.

HATS are also made for women's wear, of chips, straw, or cane, by plaiting, and sewing the plats together; beginning with the center of the crown, and working round till the whole is finished. Hats for the same purpose are also wove and made of horse-hair, silk, &c.

HACHEL, or **HITCHEL**, a tool with which flax and hemp are combined into fine hairs. It consists of long iron pins, or teeth, regularly set in a piece of board.

There are several sorts of hatchels, each finer than the other, with which flax and hemp are prepared for spinning.

HATCHES, or **HATCH-WAYS**, certain holes in the decks of a ship, through which the cargo passes into the hold and lower apartments: hatches are also the covers which lie over these holes.

HATCHET, a small light sort of an ax, with a basil-edge on its left side, and a short handle, as being to be used with one hand.

Hatchets are used by various artificers, and more particularly in hewing of wood.

HATCHING, the action whereby fecundated eggs, after a proper time of incubation, exclude their young. The learned M. Reaumur has obliged the world with an ingenious treatise on the method of hatching chickens by an artificial heat.

HATCHING, or **HACHING**, in designing, &c. the making of lines with a pen, pencil, graver, or the like; and the intersecting or going across those lines with others drawn a contrary way, is called counter-hatching. The depths and shadows of draughts are usually formed by hatching.

Hatching is of singular use in heraldry, to distinguish the several colours of a

shield, without being illuminated: thus gules or red is hatched by lines drawn from the top to the bottom; azure, by lines drawn across the shield; and so of other colours. See the articles *Gules*, *Azure*, &c.

HATCHMENT, in heraldry, a name sometimes used for an achievement, or escutcheon over a gate, door, or on the side of an house.

HATCHMENT also signifies the marshalling of several coats of arms in an escutcheon.

* **HAVANNA**, a sea-port town of the island of Cuba, in America, seated on the north-west part of the island, at the entrance of the Gulph of Mexico. It has a secure and capacious harbour, and of very difficult access to an enemy, the entrance being narrow, and well defended by forts and platforms of great guns. This is the place of rendezvous of the galleons from Porto Bello and Vera Cruz, on their return to Spain. The town is not above two miles in circumference, and contains near two thousand inhabitants, consisting of Spaniards, mulattoes, and negroes, besides the garrison. The governor has the title of captain-general of the island. The bishop of St. Jago, capital of the island, resides here, his own city being upon the decline; likewise most of the men of figure and fortune upon the island live at Havanna. It is a trading town. It was taken by Great Britain in 1762, but was restored to the Spaniards by the treaty of 1763. Long. 84. 10. W. Lat. 23. 0. N.

HAVEN, a sea-port or harbour.

HAUNCH, or **HANCH**, the hip, or that part of the body between the last ribs and the thigh.

HAUNT, among sportsmen, the place to which game are accustomed to resort: among hunters, it is the walk of a deer, or the place of his ordinary passage.

HAUTBOY, a musical instrument of the wind kind, shaped much like the flute, only that it spreads and widens towards the bottom, and is sounded through a reed. The treble is two feet long; the tenor goes a fifth lower, when blown: it has only eight holes; but the bass, which is five feet long, has eleven.

HAW, in botany, &c. a sort of berry, the fruit of several species of *mespilus*, thence denominated haw-thorns. See *Mespilus*.

HAW, in farriery, is a swelling and sponginess that grows in the inner corner

of the eye of a horse, so large sometimes as to cover a part of the eye.

The method of curing it is easily performed, by cutting part of it away; but the farriers are apt to cut away too much: the wound may be dressed with honey of roses; and if a fungus or spongy flesh arises, it should be sprinkled with burnt alum, or touched with blue vitriol.

HAWK, a synonymous term with falcon, though, by some, restrained to the lesser sorts of falcons.

HAWKER, in commerce, a pedlar, or person that goes about the country selling wares: this name is said to arise from their uncertain wandering, like persons who with hawks seek their game where they may find it. The name is now chiefly confined to the venders of newspapers, &c.

HAWKING, the exercise of taking wild-fowl by means of hawks.

HAWSE, in naval architecture, that part of a ship's bow, through which the cable passes, and is drawn into and let out of the ship.

HAY, any kind of grass, cut and dried, for the food of cattle.

Whatever uplands are designed to be mowed for hay, are to be shut up in the beginning of February, and no cattle suffered to come upon them afterwards; but the meadows and marsh lands, where the grass grows quicker, need not be shut up till April, except the spring be bad; and many farmers feed those meadows which are in danger of overflowing till the first of May, and then shut them up for mowing.

The process of hay-making is so well understood, that it would be lost labour to describe it: we shall therefore only observe, that mowing of land too often, or continuing it too long, is a very great prejudice to it, unless it have the advantage of being fed and renewed by land-floods at times. The farmer who has not this advantage to his lands, should feed them once in two or three years, instead of making hay from them, unless he chuses to lay on manure constantly to keep them in heart. Feeding the hay lands is the same sort of respite that fallowing is to corn lands, both very necessary and advantageous.

Sain-foin **HAY** is of several sorts, which may be distinguished by the following terms, viz. 1. The virgin. 2. The blossomed. 3. The full grown. And 4. The thrashed hay. The first of these is beyond

yond comparison the best. It must be cut before the blossoms generally appear; for when it stands till it is full blown, the most spirituous and nourishing parts of its juice are spent, the sap is much impoverished, and the fain-foin can never recover that richness it had in its virgin-state.

The second sort is that cut in the flower, which, though much inferior to the virgin-hay, far exceeds any other kind as yet commonly propagated in England; and if it be a full crop, it may amount to three tuns an acre. This is that fain-foin which is commonly made, and the larger it is, the more nourishing it is for horses.

The next sort of fain-foin is the full grown, cut when the blossoms are gone, or going off: this also is good hay, tho' it falls short by many degrees of the goodness of the other two sorts: but it makes a greater crop than either of them, because it grows to its full bulk, and shrinks little in drying.

The last sort is the threshed hay, which when not damaged by wet weather, has been found more nourishing to horses than coarse water-meadow hay; and, when it is cut small by an engine, is good for cattle, and much better than the chaff of corn. The best time to cut it, is when the greatest part of the seed is well filled; the first-blown ripe, and the last-blown beginning to be full.

The goodness of the hay depends greatly upon the manner of ordering it. The best hay in all England is made of fain-foin, without ever spreading it. This method, though it be longer before it be finished, costs less labour than the other. If fain-foin be laid up pretty green, it will take no damage, provided it be set in small round ricks, with a large basket drawn up in the middle of each, to have a vent-hole through which the superfluous moisture of the hay may transpire. As soon as its heating is over, these ricks ought to be thatched; and all fain-foin ricks, that are made when the hay is full dried in the cocks, ought to be thatched immediately after the making them. That which is laid up moist dried will come out of the rick of a green colour; but that which has been much heated in the rick, will be brown.

The seed affords the owner another opportunity of making a profit of his fain-foin; but this, if the hoeing husbandry were general, would not be vendible in great quantities for planting; because the

ordinary crop of an acre will produce seed enough to drill an hundred acres, which would not want planting for a long time. The other use then of this seed is for provender; and it has been affirmed by some, who have made trials of it, that three bushels of good fain-foin seed given to horses, will nourish them as much as four bushels of oats; and when well ordered, it is so sweet, that most sorts of cattle are greedy of it.

HAY-BOTE, in law, a liberty to take thorns, and other wood, to make and repair hedges, gates, fences, &c. by a tenant for life or years.

HAY-BOTE is also taken for wood for the making of rakes and forks, used in making hay.

HAYWARD, the person who keeps the common herd or cattle of a town.

He is appointed by the lord's court, and his office is to see that the cattle neither break nor crop the hedges of inclosed grounds; he is also to look to the fields, and impound cattle that commit trespass therein.

HAZARD, a game on dice, without tables, is very properly so called, since it speedily makes a man, or ruins him. It is played with only two dice; and as many may play at it as can stand round the largest round table. It is certainly one of the most bewitching and ruinous games played on the dice.

HAZLE, *Corylus*, in botany. See *Corylus*.

HAZLE-EARTH, in agriculture, a moderately compact earth, much approaching to the nature of the chisely soil, and indeed properly a species of it, but always contained a large quantity of resin-coloured sand.

HEAD, *Caput*, the uppermost or foremost part of the body of an animal. When viewed on the outside, it is divided into the hairy scalp and the face. The hairy scalp covers the upper part of the os frontis, the ossa parietalia, the os occipitis, and the upper and lower portions of the temporal bones. The uppermost part of the hairy scalp is termed the vertex, or fontanella; the back part, occiput; the lateral parts, the temples. See *Cranium*.

HEAD-ACH, *Cephalalgia*, a very painful sensation in the nervous membranes of the head, proceeding from various causes, and frequently accompanied with a variety of troublesome symptoms, according to its different degree and situation.

As

As the causes of this disorder are various, they ought to be carefully distinguished and enquired into, because in removing them the whole method of cure in a great measure consists: but in general, the intentions of cure in this disorder are these following.

First, if the blood and humours are impetuously conveyed to the head, and remain there, they are partly to be derived to the more ignoble parts, and partly to be dissipated by proper remedies.

Secondly, the spasmodic strictures of the membranes of the head, generally produced by an acrid caustic matter, are to be relaxed, that the fluids, whose progressive motion through the membranes was by this means hindered, may now circulate with the greater freedom.

Thirdly, the material cause of the disorder, which is peccant with respect to its quality, is to be corrected and gently evacuated through proper excretions. And,

Lastly, in order to prevent a relapse, the whole head and nervous system are to be corroborated by proper remedies; and more especially by a well chosen diet and regimen.

HEAD-MOULD-SHOT, a disease in children, wherein the fontanelles, generally the coronal, have their edges shot over each other, so as to compress the internal parts. This disease usually occasions convulsions, and admits of no cure, unless room could be given by a division of the fontanelles. This disorder is opposite to the horse-shoe-head.

HEAD is also used for the top or extremity of any thing; thus we say, the head of a tree, the head of a bone, the head of a nail, &c.

HEAD, in architecture, an ornament of carved work; or sculpture, frequently serving as the key of an arch; or plat-band, on other occasions.

These sort of heads usually represent some of the divinities, virtues, seasons, ages, &c. with their attributes, as a thunderbolt for Jupiter, a diadem for Juno, a trident for Neptune, a crown of ears of corn for Ceres, a helmet for Mars, a caduceus for Mercury, &c.

The heads of beasts are also used in places suitable, as an horse's head for an equerry; a deer's, or boar's head, for a park or forest; a dog's head for a kennel; a bullock's, or sheep's, for a shambles or market-house. In the metopes, friezes, and other parts of certain antique Doric

temples, we see representations of bulls, locks, or rams-heads, as a symbol of the sacrifices offered there.

HEAD, in heraldry. The heads of men, beasts, or birds, are very frequent in armoury, and borne either full-faced, looking forward; or side-faced in profile, when only one half of the face appears, which differences ought to be mentioned in blazoning, to avoid mistakes. As the head is the principal part of the body, so it is of course the noblest bearing.

HEAD, among huntsmen, is used for the horns of a deer, as a hart, buck, &c.

HEAD, in the military art. Head of a work is the front of it next the enemy, and farthest from the place.

HEAD, in painting, sculpture, &c. a representation of that part of the human body, whether in colours, draught or creux: if taken from the life, or supposed to bear a just resemblance to the person, it is more properly called portrait. See *Portrait*.

HEAD-BOROUGH, at this time, are a kind of constable.

HEAD-TIN, in metallurgy, a preparation of tin-ore toward the fitting it for working into metal. When the ore has been pounded and twice washed, that part of it which lies uppermost, or makes the surface of the mass in the tub, is called head-tin: this is separated from the rest, and after a little more washing becomes fit for the blowing-house.

Moor's HEAD is understood of a horse with a black head and feet; the body being usually of a roan colour. Among engineers a Moor's head is used for a kind of bomb or granado shot out of a cannon. Among chemists it is a cover, or capital, of an alembic; having a long neck to convey the vapours raised by the fire into a vessel, which serves a refrigeratory.

Dragon's HEAD, in astronomy, &c. is the ascending node of the moon, or other planet. See the article *Node*.

HEALTH, *Hygieia*, *Hygeia*, a proper disposition of the body, and all its parts, forming their respective functions; and this consists in a due connection. It is likewise applied to the mind, and then it means a just disposition of the rational powers and passions to perform their proper actions; and this, in a great measure, depends on bodily health. The preservation and restoration of health constitute the objects of the arts of medicine. The continuance

quance of health depends principally on the fix non-naturals, air, food, exercise, the passions, evacuation and retention, sleeping and waking. The ancients erected a goddess, to whom they supposed the care of health to belong: the Greeks worshipped her under the name *Ugieia*, and the Romans under that of *Salus*. Her temple at Rome was on the Mons Quirinalis, where she had a statue crowned with medicinal herbs. She is represented in medals with a serpent stretched on her left arm, and holding a patera to it with the right: sometimes she has an altar before her with a serpent twisted round, raising its head to take something out of the same; with the inscription *SAL. AUG.*

HEAM denotes in animals the same as after-birth or secundines in women.

HEARING, *Auditus*, one of the external senses, being the act or faculty of perceiving sounds; its organ is the ear, particularly the auditory nerve diffused through it; its objects are certain vibrations of the air. The ear and its several membranes, nerves, canals, &c. are vehicles for the reception, modification, and transmission of sound to the brain, which is the seat of this sense.

HEARSE, among sportsmen, a hind of the second year of her age.

HEART, *Cox*, in anatomy, a muscular body situated in the cavity of the thorax, on the anterior part of the diaphragm, between the two laminae of the mediastinum. It is somewhat conical, flatted on the sides, round at the top, and oval at the basis; this last is accompanied with appendices, called auriculæ, and by large blood-vessels; and all these are included in a membranous capsula, named pericardium.

The heart and parts belonging to it are the principal instruments of the circulation of the blood. The two ventricles ought to be considered as two syringes so closely joined together as to make but one body, and furnished with suckers in contrary directions to each other; so as that by drawing one of them, a fluid is let in, and forced out again by the other.

The heart is made up of a substance capable of contraction and dilatation. When the fleshy fibres of the ventricles are contracted, the two cavities are lessened in an equal and direct manner, more according to the breadth or thickness, than according to the length of the heart; because the number of transverse fibres is much greater than that of the longitudinal ones.

The fleshy fibres, thus contracted, do the office of suckers, by pressing up the blood in the ventricles; which blood being forced to the basis of the heart, presses the tricuspidal valves against each other, opens the semilunares, and rushes with impetuosity through the arteries and their ramifications, as through so many elastic tubes. The blood thus pushed on enters the capillary vessels, and is from thence forced to return by the veins to the auricles, which like retirements lodge in the blood returned by the veins during the time of a new contraction, which is termed systole.

The contraction or systole ceases immediately; and in that time the auricles, which contain the venous blood, being contracted, force the blood through the tricuspidal valves into the ventricles, the sides of which are thereby dilated, and this dilatation is called diastole. In this manner does the heart perform the circulation, and that three different ways: the first and most universal kind of circulation is that by which almost all the arteries of the body are filled by the systole of the heart, and the greatest part of the veins evacuated by the diastole.

The second kind of circulation, opposite to the first, is through the coronary vessels of the heart, the arteries of which are filled with blood, during the diastole of the ventricles, and the veins emptied during the systole.

The third kind is that of the left ventricle of the heart, through the venous ducts of which a small quantity of blood passes, without going through the lungs, which is the course of all the remaining mass of blood. *Winslow.*

As often as the pulse becomes quicker, either the resistance is lessened, or the force of the heart is increased, or a less quantity of blood than usual is expelled by the heart at each contraction.

If the pulse becomes slower than usual, either the resistance is increased, or the power of the heart is diminished, or a greater quantity of blood is thrown out of the heart.

When the resistance is increased, the pulse will necessarily become slower, or the force of the heart will be increased, or a less quantity of blood than usual will be squeezed out of the heart.

When the resistance is lessened, either the pulse is accelerated, or a greater quantity of blood is thrown out at every systole, or the force of the heart is diminished.

If

If the force of the heart be increased, either the resistance will necessarily be increased, or the pulse will be accelerated, or more blood will be thrown out by the heart.

If the force of the heart be diminished, either the resistance will necessarily be diminished, or the pulse will become slower, or less blood will be squeezed from the heart.

When a less quantity of blood is discharged by the heart, either the pulse will be accelerated, or the force of the heart diminished, or the resistance will be increased.

When more blood is squeezed out of the heart, either the pulse will become slower, or the force of the heart will be increased, or the resistance will be diminished.

HEAT, *Calor*, one of the qualities of the body, opposed to cold. Its presence is known, and its degree measured by the expansion of the air or spirit in the thermometer. It is properly a sensation excited in us by the action of fire, so that it is a particular modification of our minds, and not any thing existing in that form in the body that occasions it. Heat, in the body that communicates it, is only motion; in the mind, a particular disposition of the soul.

Heat, with respect to the effect produced on us, is estimated by its relation to the organ of feeling, no object appearing to be hot, unless its heat exceed that of our bodies.

Our latest and best writers of experimental and chemical philosophy differ very considerably about heat; the fundamental difference is, whether it be a peculiar property of one certain immutable body called fire, or whether it may be produced mechanically in other bodies, by inducing an alteration in the particles thereof.

The former tenet, which is that of Democritus, and as ancient as the system of atoms, had given way to that of the Cartesians and other mechanists, who assert heat to consist in a certain motion of the insensible particles of a body, but is now with great address retrieved and improved by Homberg, the younger Lemery, s'Gravefande, and particularly Boerhaave. See the article *Fire*.

HEAT, in geography. The diversity of the heat of climates and seasons arises from the different angles under which the sun's rays strike on the earth's surface.

It is shewn in the mechanics, that a

moving body striking perpendicularly on another, acts on it with all its force; and that a body striking obliquely acts with the less force, the more it deviates from the perpendicular. Now fire moving in right lines must follow the same law, and consequently its action must be measured by the sine of the angle of incidence: and hence fire, striking on any obstacle in a direction parallel thereto, has no sensible effect, by reason the ratio is almost infinite, that is, nothing.

Hence Dr. Halley gives a mathematical computation of the effect of the sun under different climates and seasons, going on this principle, that the simple action of the sun, or all other impulses, is more or less forceable, according to the sines of the angles of incidence, or to the perpendicular let fall on the plane: whence the vertical ray being put for a radius, the force of the sun on the horizontal surface of the earth will be to that, as the sine of the sun's altitude at any other time. Hence it follows, that the time of the continuance of the sun's shining being taken for a basis, and the sines of the sun's altitudes erected thereon as perpendiculars, and a curve drawn through the extremities of those perpendiculars, the area comprized therein will be proportionable to the collection of the heat of all the sun's beams in that space of time.

Hence it will always follow, that under the pole the collection of all the heat of a tropical day is proportionate to a rectangle of the sine of 23 degrees and a half into 24 hours, or the circumference of a circle; that is, the sine of 23° and a half being nearly four-tenths of radius, as eight-tenths into 12 hours: or the polar heat is equal to that of the sun continuing 12 hours above the horizon at 53° height, than which the sun is not five hours more elevated under the equinoctial.

But whereas the nature of heat is to remain in the subject, after the luminary is removed, and particularly in the air; under the equinoctial, the 12 hours absence of the sun does but little diminish the motion impressed by the past action of his rays, before he rises again: but under the pole, the long absence of the sun in six months, wherein extreme cold obtains, hath so chilled the air, that it cannot, before the sun has got far towards it, be any ways sensible of his presence, his beams being obstructed by thick clouds and perpetual fogs. Add to this, that the different degrees of heat and cold in different places

places depend, in a great measure, upon the accident of situation with regard to mountains, vallies, &c. the first greatly helping to chill the air by the winds that blow over them, and which come in eddies through the adjoining levels. Mountains sometimes have the effect of a burning mirror on the adjacent plane, and the same effect is sometimes produced from the concave or convex parts of clouds, either by refraction or reflection. And some take these to be sufficient to produce thunder, lightning, &c.

A stony, sandy, or chalky soil reflects most of the rays into the air again and retains but few, whereby a considerable accession of heat is made to the air; as, on the contrary, black earths absorb most of the rays and return few into the air.

HEAT, in the animal œconomy, known by the several names of natural heat, vital heat, innate heat, and animal heat, is commonly supposed to be that generated by the attrition of the parts of the blood, occasioned by its circulatory motion, especially in the arteries.

To what organs, or operations, the heat of the human body, and other animal bodies, is owing, is hitherto extremely doubtful.

HEAVEN, *Cœlum*, that orb over our heads where the heavenly bodies revolve. Philosophers, divines, and astronomers, lay down divers heavens, as the highest or empyrean heaven, the ætherial or starry heaven, and the planetary heaven.

HEAVEN, among divines called the empyrean, is the abode of God, and blessed spirits, such as angels, and the souls of the righteous deceased. This in Scripture is frequently called the kingdom of heaven, the heaven of heavens, the third heaven, paradise, the new Jerusalem, &c. This heaven is conceived as a place where the Deity is pleased to afford a more immediate view of himself than in the other parts of the universe, where he is likewise present. This makes the beatific vision. The inspired writers, particularly Isaiah and St. John the Divine, give us very magnificent descriptions of heaven, its structure, apparatus, and attendance.

The ancient Romans had a kind of heaven in their theology, called Elysium or Elysian fields, as the Mahometans have their paradise, which is very gross, agreeable to the genius of their religion.

HEAVEN, in astronomy, called the ætherial and starry heaven, is that immense region where the stars, planets,

and comets are ranged. It is vulgarly called the firmament, though the original word used by Moses, when speaking of the second day's creation, properly signifies no more than expanse, a term adapted to the impression which the heavens make on our senses; whence in other parts of Scripture the heaven is compared to a curtain or tent to dwell in.

Sir Isaac Newton has abundantly shewn the heavens to be void of all resistance, and consequently almost all matter, from the planets persisting in their motions without any sensible diminution of their velocity, and the comets passing freely in all directions.

HEAVING, among seamen, the act of turning a windlass or capstern by the help of long bars thrust into holes or mortices cut in the bodies of them.

HEAVING *a-head*, drawing the ship a-head by heaving in the cable, and thereby making her advance towards the anchor or place where the cable or rope which draws her onward is fastened.

HEAVING-DOWN, the same with careening. See *Careening*.

* HEBE, in Pagan worship, the goddess of youth, was, according to Homer, the daughter of Jupiter and Juno, but most writers give the following account of her birth. Juno being invited to an entertainment by Apollo, eat very eagerly of some wild lettuces, upon which she conceived and brought forth this goddess. Jupiter was so pleased with her beauty, that he made her his cupbearer, in the discharge of which office she always appeared crowned with flowers; but unluckily at a festival of the gods in Æthiopia, she slipped her foot, and got so indecent a fall, that Jupiter was obliged to discharge her from her post. To repair this disgrace, she was married to Hercules, after his being advanced to the skies, and their nuptials were celebrated with all the pomp belonging to a celestial wedding. This goddess was held in high veneration among the Sicyonians, who erected a temple to her by the name of Dia, she had another at Corinth, and the Athenians consecrated an altar in common to her and Hercules. Mythologists make Hebe signify that mild temperature of the air, which awakens to life the trees, plants, and flowers, and clothes the earth in vegetable beauty; but when she slips or falls, that is, when the flowers fade, and the autumnal leaves drop, Ganymede, or the winter takes her place.

H E B

HEBRAISM, an idiom or peculiar manner of expression in the Hebrew language.

HEBREW, or **HEBREW-LANGUAGE**, that spoken by the ancient Jews, and wherein the Old Testament is wrote.

This appears to be the most ancient of all the languages in the world, at least we know of none older : and some learned men are of opinion that this is the language in which God spoke to Adam in Paradise, and in which the saints will speak in heaven.

The books of the Old Testament are the only pieces to be found in all antiquity, written in pure Hebrew ; and the language of many of these is extremely sublime.

The primitive words, which are called roots, have seldom more than three letters or two syllables.

In this language there are twenty-two letters, only five of which are usually reckoned vowels, which are the same with ours, viz. *a, e, i, o, u* ; but then each vowel is divided into two, a long and a short, the sound of the former being somewhat grave and long, and that of the latter short and acute : it must however be remarked, that the two last vowels have sounds that differ in other respects besides the quantity, and a greater or less elevation. To these ten or twelve vowels may be added others, called semi-vowels, which serve to connect the consonants, and to make the easier transitions from one to another. The number of accents in this language are, indeed, prodigious : of these there are near forty, the use of some of which, notwithstanding all the enquiries of the learned, are not yet perfectly known. We know, in general, that they serve to distinguish the sentences like the points called comma, semicolons, &c. in our language ; to determine the quantity of the syllables, and to mark the tone with which they are to be spoke or sung.

HEBREWS, or *Epistle to the HEBREWS*, a canonical book of the New Testament.

Though St. Paul did not prefix his name to this Epistle, the concurrent testimony of the best authors, ancient and modern, afford such evidence of his being the author of it, that the objections to the contrary are of little or no weight. His mentioning himself in it, as lately a prisoner in Italy, and his promise to visit

H E C

the Hebrews, together with Timothy, who had been released from imprisonment, both denote the writer, and the time of his writing this Epistle, that it was just after the deliverance of St. Paul from his first trial at Rome.

The Hebrews, to whom this Epistle was wrote, were the believing Jews of Palestine, and its design was to convince them, and, by their means, all the Jewish converts, wheresoever dispersed, of the insufficiency and abolishment of the ceremonial and ritual law. In order to which he undertakes to shew, first, the superior excellency of Christ's person above that of Moses : secondly, the superiority of Christ's priesthood above the levitical : thirdly, the mere figurative nature, and utter insufficiency of the legal ceremonies and sacrifices : and, fourthly, that to forsake the Mosaical law, was not, as the Jews boldly asserted, to apostatize from God, but was their indispensable duty and obligation. These particulars are intermixed with proper inferences and exhortations, all tending to shew the Jewish Christians the unreasonableness, folly, and danger of relapsing into Judaism.

* **HECATE**, in Pagan worship, the goddess of the infernal regions, and of inevitable fate ; she was represented exceeding tall, her head covered with frightful snakes, and her feet of a serpentine form, surrounded with dogs, an animal sacred to her. She presided over streets and highways, for which cause she was called Trivia, and the doors of the houses being under her protection, she was also called Propylæa. The appellation of Brimo was given her on account of her dreadful shrieks, when Mars, Apollo, and Mercury, meeting her in the woods, attempted to ravish her. She was also famous for her skill in poisonous herbs and roots, incantments, and magical arts, in the practice of which her name was constantly invoked.

HECATOMB, *Hecatombe*, in antiquity, a sacrifice of an hundred oxen, at as many altars, and by as many priests.

Pythagoras we are told sacrificed a hecatomb to the muses, for joy of discovering the demonstration of the 47th Prob. of Euclid's first book.

HECKLE. See *Hatchel*.

HECKLING of *Hemp and Flax*. See *Hemp and Flax*.

HECTIC, or **HECTIC FEVER**. See *Slow Fever*.

H E G

* **HECTOR**, the son of Priam and Hecuba, and father of Astyanax, is celebrated for the valour with which he for a long time defended the city of Troy against the Greeks; he was killed by Achilles, who dragged his body, fastened to his chariot, thrice round the walls of Troy, and afterwards restored it to Priam for a large ransom.

* **HECUBA**, the daughter of Dymas, king of Thrace, was married to king Priam, by whom she had seventeen children. After the taking of Troy, she fell to the lot of Ulysses. She was so enraged at seeing her daughter Polyxena sacrificed on Achilles's tomb, that she vented a thousand imprecations against the Greeks, and, according to the fable, was transformed into a bitch.

HEDERA, ivy, in botany.

HEDERA TERRESTRIS, ground ivy, a genus of plants called by Linnæus *glechoma*.

HEDGE, in agriculture, a fence inclosing a field or garden, made of bushes, boughs, &c. interwoven together.

For quickset hedges, hawthorn is allowed to be the best of all the English shrubs. The best method of raising this for use, is to put the haws into the ground as soon as ripe, and cover them with earth; and by the spring twelvemonth, the young shoots will be fit to transplant from the seed-plot into hedge-rows. The crab-tree is a common mixture with the hawthorn in hedges; but grows faster than the hawthorn, and requires cutting to keep the hedge even. The young hawthorns raised from seed always thrive better than those picked up wild in the field. *Moreton's Northampton.*

HEEL, in anatomy, the hind-part of the foot.

HEEL of a Horse, the lower hinder part of the foot, comprehended between the quarters, and opposite to the toe. The heel of a horse should be high and large, and one side of it should not rise higher than the other upon the pastern. To recover the heels of a horse that is hoof-bound, you should take out his sole, and keep his heels very wide, by which they will be restored in a month.

HEELING, in the sea-language, stooping or inclining to one side, either by the pressure of the sail or sea, or to clean the ship's bottom, &c.

HEGIRA, in chronology, a celebrated epocha among the Arabs and Mahometans.

H E L

The word is Arabic, *bagirah*, which signifies flight.

The event which gave occasion to this epocha was Mahomet's flight from Mecca; the magistrates of this city, fearing this impostor might raise a sedition, expelled him on the 15th or 16th of July, in the year 622, being the fourteenth year of his assuming the character of prophet, and under the reign of the emperor Heraclius.

There is an earlier hegira, in the same year, when Mahomet and his disciples relinquished Medina. Both these hegira's the Mahometans call *hegiran*.

HEIGHT, *Altitude*, in geometry. See the article *Altitude*.

HEIR, *Hæres*, in law, a person who succeeds another by descent to lands, tenements, hereditaments, being an estate of inheritance, or an estate in fee; because nothing passes by right of inheritance but in fee.

HEIR-APPARENT, a person so called in the life-time of his ancestor, at whose death he is heir at law.

HEIRESS, a female heir to one who has an estate in lands, &c.

HEIR-LOOM, a word that comprehends in it divers pieces of furniture; as the first bed, and other things, which by the custom of some places have belonged to a house for several descents. These are never inventoried after the death of the owners as chattles; and therefore do not go to the executor or administrator, but to the heir along with the house, by custom, and not by common law.

* **HELEN**, the daughter of Tyndarus, king of Sparta, and of Leda, was thought the most beautiful woman of her time; she was stolen by Theseus, who afterwards restored her to her brothers Castor and Pollux, who married her to Menelaus, who by this marriage became king of Sparta, and by him she had Hermione. She was stolen a second time by Paris, the son of Priam, when all the princes of Greece interesting themselves in the injury done to Menelaus, occasioned the famous Trojan war, which lasted ten years. After the death of Paris, Helen married his brother Deiphobus, who was killed by Menelaus; at length this last prince dying, she retired to Polixo, who commanded in Rhodes; but instead of receiving the assistance she expected, was hanged on a tree, by order of that queen, who was her relation.

H E L

HELIACAL, in astronomy, a term applied to the rising or setting of the stars, or, more strictly speaking, to their emergence out of and immersion into the rays and superior splendor of the sun.

A star is said to rise heliacally, when, after being in conjunction with the sun, and so invisible, it gets at such a distance as to be seen before the sun rise; and it sets heliacally, when it approaches so near the sun as to be hid by his rays: so that strictly these are only an apparition and occultation.

The heliacal rising of the moon happens when she is seventy degrees distant from the sun; for the other planets twenty degrees distance is required; and for the stars more or less, according to their magnitude.

To find by the globe the time of the year when any known star or planet will rise or set heliacal: rectify the globe, and bring the star or planet to the east part of the horizon; then see what degree of the ecliptic is elevated above the western horizon, according to the respective arch of vision; then the opposite degree on the horizon, so found, compared with the calendar, will shew you the day of its rising, and for its setting bring the star or planet to the west-side of the horizon; observe to the east what degree is elevated equal to the known arch of vision; then, by the opposite degree, will be found the day of its setting.

HELIANTHEMUM, small sun-flower, in botany, called by Linnæus *cistus*.

HELIANTHUS, the great sun-flower, in botany, a genus of plants. The flowers of which are yellow, and often more than a foot in diameter.

HELICE, in astronomy, the same with *ursa major*.

HELICTERES, the screw-tree, in botany.

HELIOCENTRIC Place of a Planet, that place or point in the ecliptic wherein a planet would appear to a spectator placed in the center of the sun.

The heliocentric place is the same with the longitude of a planet viewed from the sun.

HELIOCENTRIC Latitude of a Planet, the latitude it would appear in at any time to a spectator placed in the sun.

HELIOCOMETES, a phenomenon sometimes observed about sun-setting; being a large luminous tail, or column of light, proceeding from the body of the sun, and dragging after it, not unlike the tail of a comet; whence the name.

H E L

HELIOPTROPE, in natural history, a hard bluish-green jasper, with red variations.

HELIOSCOPE, in optics, a sort of telescope, peculiarly adapted for observing the spots, eclipses, &c. of the sun.

There are various apparatus's of this kind; but the best method of viewing this luminary is by the solar telescope.

HELIOSTATA, in optics, an ingenious instrument invented by the learned Dr. Gravesande; so called from its use, which is to fix, as it were, the rays of the sun in an horizontal direction across the dark chamber, all the while it is in use.

HELIX, in geometry, the same with a spiral line.

HELIX, in architecture. Some distinguish between it and spiral. Daviler says a staircase is helical, when the steps wind round a cylindrical newel; whereas the spiral winds round a cone, continually approaching nearer its axis. Helix also denotes, in architecture, the cauliculus or little volutes under the flower of the Corinthian capital, called likewise *urillæ*.

HELIX, in anatomy, the external circle or border of the ear, in contradistinction to the inner protuberance corresponding thereto, called the *anthelix*.

HELL, *Gehenna*, *Tartara*, *Hades*, *Infernus*, &c. the place of divine punishment after death, in contradistinction to heaven. See *Heaven*.

As all religions have supposed a future state of existence after this life, so all have their hell or place of torment, in which the wicked are supposed to be punished. The hell of the ancient heathens was divided into two mansions, the one called *Elysium*, on the right hand, pleasant and delightful, appointed for the souls of good men; the other called *Tartara*, on the left, a region of misery and torment, appointed for the wicked. The latter was only hell in the present restrained sense of the word. See *Elysium*.

The Jews placed hell in the center of the earth, and believed it to be situated under waters and mountains. According to them there are three passages leading to it: the first is in the wilderness, and by that Korah, Dathan, and Abiram, descended into hell; the second is in the sea, because Jonah, who was thrown into the sea, cried to God out of the belly of hell; the third is in Jerusalem, because it is said, "The fire of the Lord is in Zion, and his furnace is in Jerusalem." They likewise acknowledged seven degrees of pain

pain in hell, because they find this place called by seven different names in scripture. Though they believed that infidels, and persons eminently wicked, will continue for ever in hell; yet they maintained, that every Jew who is not infected with some heresy, and has not acted contrary to the points mentioned by the Rabbins, will not be punished therein for any other crimes above a year at most.

The Mahometans believe the eternity of rewards and punishments in another life. In the Koran it is said, that hell has seven gates; the first for the Mussulmans, the second for the Christians, the third for the Jews, the fourth for the Sabians, the fifth for the Magians, the sixth for the Pagans, and the seventh for the hypocrites of all religions.

Among Christians, there are two controverted questions in regard to hell; the one concerns locality, the other the duration of its torments. The locality of hell, and the reality of its fire, began first to be controverted by Origen. That father interpreting the Scripture account metaphorically, makes hell to consist not in external punishments, but in a consciousness or sense of guilt, and a remembrance of past pleasures.

Among the moderns, Mr. Whiston advanced a new hypothesis. According to him, the comets are so many hells appointed in their orbits alternately to carry the damned into the confines of the sun, there to be scorched by its violent heat, and then to return with them beyond the orb of Saturn, there to starve in these cold and dismal regions. Another modern author, not satisfied with any hypothesis hitherto advanced, assigns the sun to be the local hell. As to the second question, viz. the duration of hell torments, we have Origen again at the head of those who deny that they are eternal; it being that father's opinion, that not only men, but devils, after a due course of punishment suitable to their respective crimes, shall be pardoned and restored to heaven. The chief principle upon which Origen built his opinion, was the nature of punishment, which he took to be emendatory, applied only as physic for the recovery of a patient's health. The chief objection to the eternity of hell torments among modern writers, is the disproportion between temporary crimes and eternal punishments. Those who maintain the affirmative, ground their opinion on the Scripture accounts, which represent

the pains of hell under the figure of a worm which never dies, and a fire which is not quenched; and also upon the words, "These shall go away into everlasting punishment, but the righteous into life eternal."

* HELLE, in fabulous history, the daughter of Athamas, king of Thebes, by his first wife Nephæle, and the sister of Phrixus. Ino, Athamas's second wife, falling in love with Phrixus, her son-in-law, and being rejected in her advances, took the opportunity of a great famine to indulge her revenge, by persuading the king that the gods would not be appeased till he sacrificed his son and daughter; but as they stood at the altar, Nephæle invisibly carried them off, by giving them a golden ram she had got from Mercury, to bear them through the air; however, in passing the strait between Asia and Europe, Helle fell into the sea, and gave her name to the Hellespont.

HELLEBORE, *Helleborus*, in botany, a medicinal plant which the ancients reputed as a specific for the cure of melancholy and madness, &c. There are two sorts of it, white and black hellebore.

White HELLEBORE, or SNEEZE-WORT, is common on mountainous places in Germany, Switzerland, and some other parts of Europe.

The powder of the dry root is sometimes mixed with external applications for destroying cutaneous insects: snuffed up the nose, in small quantity, it proves a violent sternutatory, and in this intention is sometimes used in lethargic and other disorders.

Black HELLEBORE, or CHRISTMAS-FLOWER, is perennial, grows wild in the mountainous parts of Germany; and flowers in our gardens in January. Black hellebore root, in doses of from ten grains to half a dram, proves a very strong, though not very violent, cathartic. The hellebore of the ancients, which was ventured on without extreme caution and as a last resource, appears to have been a different species from ours, much larger and of more violent operation, called by Tournefort *belleborus niger orientalis, amplissimo, caule præalto, flore purpurascens*, which is still said to be found in plenty about Mount Olympus, and in the island of Anticyra, celebrated of old for the production of this reputed antimaniacal drug. In the present practice, this root or its preparations are used sometimes as a purgative in hydropic and other cases where

where the stronger cathartics are required, but oftener in small doses as an attenuant and deobstruent. It is found particularly serviceable against obstinate suppressions of the menstrual purgations; in plethoric habits and sanguine constitutions, where chalybeates are ineffectual or injurious.

The extract made with water is the best and safest preparation of this root when designed for a cathartic; as it contains both the purgative and diuretic parts of the hellebore, and as the irritating power of its active matter is considerably abated by the boiling: it may be given from eight or ten grains to a scruple or more, but is used oftener in conjunction with other materials of similar intention than by itself. A tincture made in proof spirit appears the most eligible preparation for the purposes of an alterative or deobstruent: four ounces of the root may be digested in a quart of the spirit, with the addition of thirty or forty grains of cochineal, to render the colour more slightly; and the filtered tincture given to the quantity of a tea-spoonful, twice a day, in warm water, or any other convenient vehicle.

HELLENISTIC, or HELLENISTIC LANGUAGE, that spoken among the Hellenists.

HELM, in the marine, an engine of wood hung on the outside of a ship behind, upon certain goings bolted to the stern-post, upon which it revolves, and by its motion directs the course of a ship at sea.

The helm is composed of two or three parts, viz. the rudder, the tiller, and the wheel; this last part, however, is seldom used but in men of war, and the largest merchant-ships.

The rudder is that part of the helm which is hung on the outside of the stern-post, as before described: in the top of the rudder there is a mortice cut, into which is firmly bolted the tiller, which is a piece of timber thrust into the rudder to turn it; and lastly, the wheel is employed to move the tiller with greater facility from one side to the other, in directing the ship.

HELMET, an ancient defensive armour worn by horsemen, both in war and in tournaments. It covered both the head and face, only leaving an aperture in the front secured by bars, which was called the visor.

It is still used in heraldry by way of crest over the shield or coat of arms, in order to express the different degrees of

nobility, by the different manner in which it is borne. Thus a helmet in profile is given to gentlemen and esquires: to a knight, the helmet standing forward, and the beaver a little open: the helmet in profile and open, with bars, belongs to all noblemen under the degree of a duke: and the helmet forward and open, with many bars, is assigned to kings, princes, and dukes.

HELVE, a term used among country people for the handle of a hatchet, pick-ax, mattock, or the like.

HEMICRANIA, in medicine, a species of head-ach; wherein only one half or side of the head is affected. See *Head-Ach*.

HEMICYCLE, in architecture, is defined by Daviler to be an arch forming a perfect semicircle.

HEMICYCLIUM, in antiquity, a part of the orchestra in the ancient theatres.

HEMICYCLIUM also signified a kind of sun-dial; being a concave semicircle, the upper cusp of which looked to the north. On the middle of the hemicyclium stood a style, whereof the point that corresponded to the center of the hemicycle, represented the center of the earth; and its shadow, being projected on the concavity of the hemicycle, which represented the space between the two tropics, pointed out not only the declination of the sun, and the day of the month, but likewise the hour of the day.

HEMISPHERE, *Hæmisphærium*, in geometry, the half of a globe or sphere, when divided into two by a plane passing through its center.

The center of gravity of a hemisphere is five eighths of the radius distant from the vertex. It is proved in optics, that a glass hemisphere unites the parallel rays at the distance of a diameter and one third of a diameter from the pole of a glass.

HEMISPHERE, in astronomy, particularly denotes one half of the mundane sphere. The equator divides the sphere into two equal parts, called the northern and southern hemispheres, having the north and south poles in their respective zeniths. The horizon also divides the sphere into two hemispheres, the upper and lower, having the zenith and nadir in their respective vertices.

HEMISPHERE also denotes a projection of half the terrestrial globe or half the celestial sphere on a plane, and is frequently called planisphere.

H E M

HEMISPHEROIDAL, in geometry, an appellation given to whatever approaches to the figure of an hemisphere, but is not exactly so.

HEMISTICH, in poetry, denotes half a verse, or a verse not completed.

Of this there are frequent examples in Virgil's *Æneid*; but whether they were left unfinished by design or not, is disputed among the learned: such are, *Ferro accincta vocat.* *Æ.* II. v. 614. And, *Italiam non sponte sequor,* *Æ.* IV. v. 361.

In reading common English Verse, a short pause is required at the end of each hemistich, or half verse.

HEMLOCK. See *Cicuta*.

HEMP, *Cannabis*, in botany, a very useful plant for making cordage and all things of that kind.

Hemp is a useful plant, purchased at a dear rate from foreigners, when it might be cultivated among ourselves, to the great benefit of the nation in general. It delights in warm, sandy, or somewhat gravelly soil; but it must be somewhat rich, and of a good depth. The best seed is that which is brightest, and retains its colour and substance in rubbing. Three bushels will sow an acre; but the richer the land is, the thicker it must be sown, and the poorer it is, the thinner. The time of sowing it, is from the latter end of March to the end of April, according as the spring falls out; but the earlier it is sown the better. If it be a dry season, great care must be taken to preserve it from birds.

The first season for gathering it is about Lammas, when a good part of it will be ripe; that is, the light summer hemp which bears no seed, and is called fimble-hemp. When it is ripe the stalks grow white, and the leaves fall downwards, turning yellow at the top; it must then be pulled up, dried, bound up in bundles as big as may be grasped in both hands, and laid by for use. Care must be taken not to break what is left standing, because it is to grow till near Michaelmas before it will be fit to gather: this is usually called karle-hemp. When it is gathered, lay it in the sun three or four days to dry, and then stack or house it till the seed be threshed out.

An acre of hemp, in the best land, commonly yields about two or three quarters of seed, which, with the hemp unwrought, is often worth from 5 to 8 l. but if wrought, from 10 to 12 l. but the fimble-hemp is not worth above half as much as the other.

H E N

As to the method of preparing it, after the seeds are threshed out of the heads, and the stalks are laid up in bundles and steeped in a standing water, the cleaner it is the better; they are fastened to poles, and left to soak about fifteen days: and when the substance of the stalk is almost rotten, the bundles are taken out and well dried. But flax, instead of being steeped in water, is usually exposed alternately to the moist air of the night, and the heat of the sun, by which means it receives a finer colour.

When hemp and flax are well penetrated and afterwards completely dried, they are bruised by handfuls on a block, with a kind of mallet; all the bullen, which is the inward substance of the stem, flies off in shivers, by the force of the blows, and nothing remains in the hands of the beater but the thin bark in large threads, through the whole length of the stem. This parcel of threads is afterwards hung on a perpendicular board, and bruised with a wooden beetle, in order to shake out all the little straws that may happen to remain of the bullen. All the gross parts are now separated from the stem, and the threads of the bark receive their perfection from the comb or hatchel. See *Hatchel*.

The refuse of this combing, which consists of all the threads which are too thick, is called tow, for the use of which, see *Tow*.

Hemp and flax are the materials of a variety of profitable manufactures; for besides linen, great quantities of ticken of all finesses, sail-cloth, incle, tape, facking, girtwip, cordage, twine, and nets, many other things are made of them: and they furnish multitude of other manufactures, which employ the poor, and bring by their exports, profit to the nation. But as we are under the necessity of importing very large quantities of hemp from foreign countries, the production of this article among ourselves, and in our plantations, cannot be too plentifully cultivated, nor too highly encouraged.

HEN, *Gallina*, in ornithology, though used in a general sense to signify any female bird, is more particularly restrained to those of the order of gallinæ.

HEN-BANE, a plant called by botanists *hyosciamus*.

HEN-MOULD, among farmers; denotes a black spongy soil, fitter for grazing than for corn. In some places, indeed, they give the name of hen-mould to a rich black earth mixed with whitish streaks, which is exceeding fertile.

* HEN.

* **HENRY I.** king of England, and duke of Normandy, surnamed Beauclerc, on account of his great learning, was the son of William the Conqueror, and the youngest brother of William Rufus and Robert. His engaging person and address, his courage, learning, and eloquence, have been highly celebrated. Robert being in Palestine when William Rufus was killed, in 1100, Henry took advantage of his absence, and caused himself to be crowned king of England, on August 5, 1100; but Robert, at his return, was acknowledged duke of Normandy, and landed at Portsmouth to make good his right to the crown of England. However, Henry came to an agreement with him, by consenting to pay him an annual tribute of three thousand marks. This tribute however being but ill paid, they rekindled the war a short time after; when Henry landing in Normandy, rendered himself master of that duchy, after the battle of Tinchebray, fought on the 27th of September, 1106, in which Robert was defeated, and taken prisoner. After which, Henry had the cruelty to cause his eyes to be put out, and confined him twenty years in Cardiffe-castle, in Glamorganshire. He died the 1st of December, 1135, aged sixty-eight, leaving his crown to Maud, or Matilda, his daughter, but was succeeded by Stephen his nephew.

* **HENRY II.** king of England, son of Geoffrey Plantagenet, and the empress Maud, or Matilda, the daughter of Henry I. succeeded Stephen the 20th of December, 1154, in the twenty-third year of his age. As the son of Geoffrey Plantagenet, he inherited the French provinces of Anjou, Tourain, and Maine, and afterwards by his marriage with Eleanor, obtained Poitou, Saintogne, Guienne, and Gascony. In his person the Norman and Saxon blood were united, and in him began the race of the Plantagenets, which ended with Richard III.

In 1172 Henry sailed with a numerous fleet to Ireland, and landing at Waterford, all the Irish princes voluntarily swore allegiance to him, so that he became master of that kingdom without bloodshed, and divided great part of the country among the English nobles, &c. who attended him in this expedition, and from them sprung some of the principal families now in Ireland. The king had for some years before met with continual disturbance, from the arrogance of Thomas Becket, whom he had raised from a mean station to the see of

Canterbury; but at last four knights, thinking to please his majesty, murdered that insolent prelate. But what is more extraordinary, the pope's legate prevailed on the king to do penance, by going barefoot three miles to Becket's shrine; and to be scourged there by the Augustine monks, who gave him fourscore lashes on his naked back.

Henry was brave, learned, prudent, polite, generous, and of a mild disposition; but these virtues could not secure him from suffering the greatest vexations, even in his own family. Lust was his predominant passion, and Eleanor his queen being jealous of Rosamond, the lord Clifford's daughter, who was his mistress, and whom he kept at Woodstock, in a labyrinth, built to secure her from the queen's rage, is said to have found means to dispatch her by poison; and the young princes, his sons, being joined by several of the nobility, and assisted by the kings of France and Scotland, raised a great rebellion. King Henry however took the king of Scotland prisoner, and afterwards not only restored the young princes to favour, but pardoned all the revolvers; however, he obliged the king of Scotland to pay him homage for his kingdom. Henry was so mortified at the disobedience of his sons, that through grief he fell sick at Chinon, in Touraine, and perceiving his end draw near, gave orders for his being carried into the church, where he expired before the altar, on the 6th of July, 1189, in the fifty-seventh year of his age, and the thirty-fifth of his reign. After which he was stripped by his ungrateful attendants, and left naked in the church; but was afterwards interred at Fontevraud, in Anjou. He was succeeded by his son Richard I.

HENRY III. king of England, commonly Henry of Winchester, from his being born in that city, was born October 1, 1207, and succeeded his father king John, the 28th of October, 1219, when but twelve years of age. Lewis, the dauphin of France, afterwards king Lewis VIII. who was called in by the barons against king John, was then in England; but having received a large sum of money returned into France. When Henry was of age, he began with exacting large sums of money, and annulling the two sacred charters granted by his father. He landed in Brittany with a numerous army, in order to recover the British dominions in France; but spending his time in diversions, shamefully returned, after having spent all his treasures:

treasures: afterwards renewing the war, he lost all Poictou, and then concluded a peace with Lewis for five years, to purchase which, Henry agreed to pay him five thousand pounds annually.

The king, who paid no regard to the constitution of England, met with many mortifications from his parliament and people, who at length obliged him to renew the two charters; which was done in Westminster-hall, in the following manner, viz. the peers being assembled in the presence of the king, each holding a lighted taper, the archbishop of Canterbury denounced a terrible curse against those who should violate the laws, or alter the constitutions of the kingdom; then the charters were read aloud, and confirmed by the king, who all this time kept his hand upon his breast; after which every one threw his taper on the ground to raise a great smoke, and wished that those who violated the charters might smoke in hell. After which, the parliament granted him a subsidy for suppressing an insurrection in Guienne. He soon reduced that province, and returned to England, where he renewed his exactions. In short, the people being still oppressed, and the barons finding that Henry could not be bound by the most solemn oaths, undertook to reform the government; accordingly commissioners were chosen by the king and the barons, and articles agreed on; which the king again broke. At last they came to an open war, when a decisive battle was fought near Lewes, in Suffex, in which the king's army was defeated, and himself, prince Edward, and the king of the Romans, taken prisoners; but afterwards the earls of Leicester and Gloucester quarrelling, the latter joined prince Edward, who had escaped from his keepers, and uniting their forces, marched against the earl of Leicester, whom they defeated and slew; the king was then set at liberty; but peace was not restored till some time after; when prince Edward engaged in a crusade, and went to the Holy Land. Henry died at London, on the 20th of November, 1272, aged sixty-five, in the fifty-sixth of his reign, and was buried in Westminster-abbey. He was succeeded by his son Edward Longshanks.

* HENRY IV. king of England, was born in 1367, and proclaimed king after the deposition of Richard II. on the 30th of December, 1399. He was the son of John of Gaunt, duke of Lancaster, third son of Edward III. He had not a just

claim to the crown, which of right belonged to Edmund of Mortimer, earl of March, then duke of York, the descendant of Lionel, duke of Clarence, the second son of Edward III. which occasioned the wars between the houses of York and Lancaster, under the device of the white rose and red. The next year, the dukes of Exeter, Surry, and Albemarle, the earls of Salisbury and Gloucester, the bishop of Carlisle, and sir Thomas Blount, the friends of Richard, formed a conspiracy, in order to assassinate Henry, and restore Richard to the throne: but being discovered, and their whole scheme frustrated, they assembled an army of forty thousand men, and set up Maudlin, a priest, whose person resembled Richard, to pretend that he was Richard himself; but in this they also failed, most of the leaders were taken and beheaded; Maudlin was hanged at London, and this conspiracy hastened the death of the unhappy king Richard, who was soon after basely murdered at Pontefract. In 1402, Henry caused Roger Clarendon, the natural son of Edward the Black Prince, and several others, to be put to death, for maintaining that Richard was alive. The same year he married Joanna of Navarre, widow of the duke of Brittany.

About this time the Scots invaded England, under the earl of Douglas, but were defeated at Halidown-hill, by the earl of Northumberland, and his son Henry Hotspur, with the loss of above ten thousand men; and in this victory several earls, and many other persons of consequence, were made prisoners; but the king ordering Northumberland to deliver up the prisoners into his hands, the earl was so exasperated, that he, with Henry Piercy, surnamed Hotspur, his son, and other lords, agreed to crown Edmund Mortimer, earl of March, whom Glendowr kept prisoner in Wales. The rebel army were encamped near Shrewsbury, headed by Henry Hotspur, the earls of Worcester, and the Scotch earl of Douglas; and the king marched directly thither, with fourteen thousand choice troops, headed by himself, the prince of Wales, and the earl of March; and on the 22d of July, at a place afterwards called Battle-field, the king obtained so complete a victory, that about ten thousand of the rebels were killed, among whom was the brave Hotspur, who fell by the hands of the prince of Wales. In 1405, another conspiracy was raised, at the head of which was the archbishop of York, the earl of Northumberland,

H E N

Thomas Mowbray earl marshal, and other noblemen, who assembled a large body of troops at York, and published a manifesto, declaring the king a traitor, and that they were resolved to place Mortimer, the lawful heir, on the throne. But this rebellion was soon suppressed by the policy of Ralph Nevill, earl of Westmoreland.

Henry died in the Jerusalem-chamber at Westminster, on the 20th of March, 1413, in the forty-sixth year of his age, and the fourteenth of his reign, and was interred in the cathedral at Canterbury. He was succeeded on the throne by his son Henry V.

HENRY V. the eldest son of king Henry IV. was born in 1388, and succeeded his father in 1413. Though wild and unruly in his youth, he no sooner obtained the crown, than he proved himself a wise and a warlike prince. He chose a council of state composed of men of distinguished wisdom, and commanded those who had been the companions of his irregularities, either to change their manners, or never to approach his person. He revived the English title to the crown of France, and in 1415 embarked his army, amounting to fifteen thousand men, and having landed at Havre de Grace, laid siege to Harfleur, which surrendered in five weeks. Soon after, the French king having assembled an army six times as numerous as that of Henry's, challenged him to fight, and Henry consented, though the French army consisted of one hundred and fifty thousand men, and the English were reduced by sickness to nine thousand. The French therefore made rejoicings in their camp as if the English were already defeated, and even sent to Henry to know what he would give for his ransom; to which he replied, "a few hours would shew whose care it would be to make that provision." The English, though fatigued with their march, sick of a flux, and almost starved for want of food, were inspired by the example of their brave king, and resolved to conquer or die. On the 25th of October, 1415, the king being encamped near Agincourt, drew up his small army into two lines, the first commanded by the duke of York, and the second by himself; he disposed his few men to such advantage, and behaved with such extraordinary conduct and courage, that he gained a complete victory, after having been several times knocked down, and in the most imminent danger of losing his life.

H E N

The English killed upwards of ten thousand men, and took more prisoners than they had men in the army. The loss of the English was only four hundred men. In 1417 the king, to enable himself to carry on the war, pledged his crown for one hundred thousand marks, and part of his jewels for ten thousand pounds, then landing at Beville, in Normandy, he reduced Caen, and the next year subdued all Normandy. In May 1420, a treaty was concluded at Troyes, which was ratified by the states of France. By this treaty, the dauphin was disinherited; and Henry V. married Catharine of France; and was declared regent of that kingdom till the death of Charles VI. when he was to take possession of that crown. But notwithstanding this treaty, the war was continued by the dauphin, and the next year Henry advanced into France with thirty thousand men; but while he was marching towards the river Loire, he was seized with a pleuretic fever, and was carried to Vincennes, where he expired the 31st of August, 1422, in the thirty-fourth year of his age, and the tenth of his reign. His body was conveyed to England, and interred in Westminster-abbey.

The queen dowager some time after married Owen Tudor, a Welsh gentleman, by whom she had Edmund, the father of Henry, earl of Richmond, who became king of England under the name of Henry VII.

* HENRY VI. was born at Windsor, December 6, 1421, and succeeded his father Henry V. in 1422, when but fourteen months old, and reigned in England under the tutelage of his uncle Humphrey, duke of Gloucester, and in France under that of his uncle the duke of Bedford. This unhappy prince was unsuccessful both at home and abroad. His misfortunes began in France by the death of his grandfather Charles VI. not quite two months after the death of his father king Henry, which gave great advantage to the dauphin, who was called Charles VII. and being crowned at Poitiers, disputed with Henry the crown of France, yet for some time the English continued to have great success in that kingdom, and gained the famous battles of Crevant, Verneuil, and Rouvrai; and every thing seemed to promise the entire possession of France, when it was prevented by an unforeseen blow. A girl, known by the name of Joan of Arc, or the Maid of Orleans,

Orleans, suddenly appeared at the head of the French army, and, in 1429, made the English raise the siege of Orleans. From that moment Henry's interest in France declined. However, he was carried to Paris, and crowned there with a double crown in the cathedral church, on the 27th of November, 1431. In 1444 a truce of eighteen months was concluded between the two crowns; after which king Henry married Margaret of Anjou, the daughter of Renatus, king of Naples; this was the source of many of his misfortunes; for the king being of a mild and easy temper, and the queen a high spirited woman, she undertook with her favourites, to govern the kingdom. The English were now every where defeated, and in 1541 we had no places left in France but Calais, and the earldom of Guines. These losses were principally occasioned by the civil wars which broke out in England. Richard, duke of York, who descended on the mother's side from Lionel, the second son of Edward III. claimed a better right to the crown than Henry, who was descended from John of Gaunt, duke of Lancaster, the third son of the same Edward. Henry was defeated and made prisoner at St. Alban's, by Richard Plantagenet, duke of York, on the 31st of May, 1455, and a second time at the battle of Northampton, on the 19th of July, 1460. The parliament then determined that Henry should keep the crown, and be succeeded by the duke of York; but queen Margaret afterwards raised an army in the north, and gained the battle of Wakefield, in which the duke of York was killed, and her husband delivered. This turned the scale, and sunk the interest of the house of York. However, Edward, earl of March, the son of Richard, duke of York, revived the quarrel, and gained a bloody battle at Mortimer's Cross, near Ludlow. In short, the earl of March, after several engagements, was proclaimed king by the name of Edward IV. by means of the earl of Warwick, called the Setter up and Puller down of Kings. Henry was taken in disguise, brought in the most ignominious manner to London, and confined in the Tower, where, in 1471, he was murdered, when fifty-two years of age.

* HENRY VII. king of England, son of Edmund, earl of Richmond, and of Margaret of the house of Lancaster. He took up arms against Richard III. and gained the battle of Bosworth, in which

Richard was slain, the 22d of August, 1485, and was crowned king of England the 30th of September following. He married Elizabeth, daughter of Edward IV. by which the claims of the houses of York and Lancaster were united. However, fresh troubles broke out, and the enemies of Henry attempted twice to dethrone him, by setting up two pretenders. The first was one Lambert Simnel, a baker's son, who assumed the title of earl of Warwick, and pretended to be the son of the duke of Clarence, brother to Edward IV. but being defeated and taken prisoner, was made king Henry's turnspit: the other was an adventurer, named Perkin Warbeck, who pretended to be Richard duke of York, Edward the Fifth's brother, who was murdered in the Tower, and being at length taken prisoner, was hanged at Tyburn. Henry assisted the emperor Maximilian, against Charles VIII. of France; he made a war on the Scots; instituted the band of gentlemen pensioners; built the chapel adjoining to Westminster-abbey, which still bears his name; and founded several colleges, by which he obtained the character of a pious prince, and a friend to learning; though he was remarkable for his avarice, and oppressing the people by numberless exactions. He died at Richmond palace, which he had caused to be erected, the 22d of April, 1509, aged fifty-two, in the twenty-fourth year of his reign, and was succeeded by his son Henry VIII. He also left two daughters, Margaret, who married James IV. king of Scotland, and Mary, who married the French king, Lewis XII.

* HENRY VIII. king of England, was born June 28, 1491, and succeeded his father Henry VII. in 1509. He joined the emperor Maximilian against Lewis XII. king of France; defeated the French at the battle of the Spurs, in 1513, and took Terouane and Tournay. At his return to England he marched against the Scots, and defeated them at Flodden-field, in which James IV. king of Scotland was slain. In 1514 Henry VIII. concluded a peace with Lewis XII. and gave him his sister in marriage. He wrote against Luther, on which account pope Leo X. gave him the title of Defender of the Faith. This work was printed, and intitled *Affertio septem Sacramentorum adversus Martyn Luther, edita ab invictissimo Angliæ & Franciæ Rege & de Hybernia ejus nominis Octavo.*

A war breaking out between the emperor Charles V. and the French king, Francis I. Henry VIII. at first took the part of the emperor, but afterwards, at the solicitation of cardinal Wolsey, contracted a strict friendship with Francis, and in 1528 laboured to procure the deliverance of pope Clement VII. By the assistance of Wolsey, he, in 1533, divorced Catharine of Arragon, and married Anne Bullen, on which he was excommunicated by the pope. Henry enraged at this excommunication, abolished the papal authority in England; refused to pay to the see of Rome his annual tribute; ordered the dissolution of monasteries, and obliged the clergy to acknowledge him head of the church, and those who refused, were either banished or put to death; among these last, were the learned sir Thomas Moore, lord-chancellor of England, and bishop Fisher. The Reformation thus begun in this kingdom, was completed under the reign of Elizabeth. Some time after, being charmed with the beauty of Jane Seymour, he caused Anne Bullen to be beheaded; but Jane dying in child-bed of prince Edward, he married Anne of Cleves, whom he afterwards divorced. He then married Catharine Howard, the duke of Norfolk's daughter, whom he caused to be beheaded, under the pretence that he had not found her a virgin; but his real motive was that of having conceived a violent passion for Catharine Parr, a young widow of great beauty. A war breaking out between him and the Scots, who were assisted by the French, Henry, in 1545, took Boulogne from the French, and burnt Leith and Edinburgh. He erected six new bishopricks, viz. Westminster, Oxford, Peterborough, Bristol, Chester, and Gloucester, all which, except Westminster, are still episcopal sees; he united Wales to England; and died in 1547, aged fifty-seven, after a reign of thirty-eight years, and was succeeded by his son Edward VI.

HENTING, among farmers, a method of sowing immediately before the plough, by which, it is pretended, a great deal of charge is saved.

HENTING-FURROWS, those turned from each other at the bottom, in plowing ridges.

HEPATIC, in medicine and anatomy, any thing belonging to the liver.

HEPATICA, noble liver-wort, in botany, a low perennial plant, which grows wild in gravelly shady grounds in Germany and other parts of Europe, and

flowers in our gardens in March or sooner.

This herb is a mild restraining and corroborant; in which intentions, infusions of it have been drank as tea, or the powder of the dry leaves given to the quantity of half a spoonful at a time.

There is also a species of moss, called hepatica, or liverwort, which grows on moist stony places, and runs up to seed in March or April.

This moss is recommended as an aperient, resolvent, and purifier of the blood. From the penetrating though mild pungency and bitterishness of its taste, sinking as it were into the tongue, it promises to be a plant of no inconsiderable virtue, though in this country at present disregarded.

HEPATITIS, in medicine, an inflammation of the liver, with an imposthume of that organ. It bears a near resemblance to the pleurisy, only its symptoms are not so intense. It commonly either kills the patient or suppurates gradually, or degenerates into a schirrhus.

HEPTAGON, in geometry, a figure consisting of seven sides and as many angles. If the sides be all equal, it is called a regular heptagon.

HEPTAGONAL NUMBERS, are a sort of polygonal numbers, wherein the difference of the terms of the corresponding arithmetical progression is 5.

One of the properties of these numbers is, that if they be multiplied by 40, and 9 be added to the product, the sum is a square number.

HEPTANDRIA, in botany, a class of plants with hermaphrodite flowers, and seven male parts or stamina in each.

Of this class are the horse-chestnut, finitilis, &c.

HEPTANGULAR, in geometry, an appellation given to figures which have seven angles.

HEPTARCHY, a government consisting of seven persons, or a country divided into seven kingdoms. The Saxon heptarchy included the southern and northern parts of England, which was cantoned into seven petty kingdoms, as those of Kent, South-Saxons, West-Saxons, East-Saxons, Northumberland, the East-Angles, and Mercia. The heptarchy was formed by degrees from the year 457, when the kingdom of Kent was first erected, and terminated in 805, when king Egbert re-united them into a monarchy.

HERACLIDÆ, or *Return of the HERACLIDÆ into Peloponnesus*, in chronology, a famous epocha that constitutes the beginning of profane history; all the time preceding that period being accounted fabulous.

This return happened in the year of the world 2862, an hundred years after they were expelled, and eighty after the destruction of Troy.

HERALD, an officer at arms, whose business it is to declare war, proclaim peace, marshal all the solemnities at the coronation, christening, marriage, and funeral of princes, to blazon and examine coats of arms, &c.

Heralds were formerly held in much greater esteem than at present, and were created and christened by the king, who pouring a gold cup of wine on their head, gave them the herald-name; but this is now done by the earl-marshal. They could not arrive at the dignity of herald without having been seven years poursuivant; nor could they quit the office of herald, but to be made king at arms.

The three chief heralds are called **Kings at Arms**, the principal of which is Garter, the next is called **Clarencieux**, and the third **Norroy**; these two last are called provincial heralds.

Besides these there are six other inferior heralds, viz. **York**, **Lancaster**, **Somerset**, **Richmond**, **Chester**, and **Windfor**; to which, on the coming of king **Geo. I.** to the crown, a new herald was added, styled **Hanover herald**; and another styled **Glocester king at arms**.

The kings at arms, the heralds, and four poursuivants, are a college or corporation, erected by a charter granted by **Richard III.** by which they obtained several privileges, as to be free from subsidies, tolls, and all troublesome offices.

HERALDRY, the art of armoury and blazoning, which comprehends the knowledge of what relates to solemn cavalcades and ceremonies at coronations, instalments, the creation of peers, nuptials, funerals, &c. and also whatever relates to the bearing of arms, assigning those that belong to all persons, regulating their right and precedencies in point of honour, and restraining those who have not a just claim, from bearing coats of arms that do not belong to them.

HERB, a denomination common to all plants, whose stalks die every year, after their seed is ripe.

There are some herbs whose root perishes with the stem, and others where

the root survives the stem by several years. The former are called annuals, and the latter perennials: those which keep their leaves all the year round, are called ever-greens. Herbs are also distinguished into kitchen, salad, and medicinal herbs.

HERBAGE, in law, signifies the pasture provided by nature for the food of cattle; also the liberty to feed cattle in the forest, or in another person's ground.

HERBAL, in literary history, a book that treats of the classes, genera, species, and virtues of plants.

HERBAL is sometimes also used for what is more usually called *hortus siccus*.

HERBALIST, the author of an herbal, or one skilled in plants.

HERCULES, in astronomy, one of the constellations of the northern hemisphere.

* **HERCULES**, in fabulous history, the son of **Jupiter** and **Alcmena**, the wife of **Amphytrion**, is said to have been born at **Thebes**, about the one thousand two hundred and eightieth year before the Christian æra. While he was in his cradle, he strangled two serpents sent by **Juno** to kill him; and in his youth had children by the fifty daughters of **Thes-tius**, all of whom were delivered in one night. He at length became famous for his twelve labours which he accomplished by the command of king **Eurystheus**, to whom he submitted, by order of the oracle. The first was his killing the lion in the forest of **Nemea**, which he strangled, and ever after wore his skin. The second his slaying the dreadful hydra, in the forest of **Lerna**. The third, his taking alive the **Erimanthyan** boar. The fourth, his running down a hind upon mount **Mænalus**, which had brazen feet and golden horns. The fifth, his destroying the **Harpies**. The sixth, his conquering the **Amazons**. The seventh, his cleansing the stables of **Augeas**. The eighth, his binding and dragging to **Eurystheus** the **Cretan** bull, whose nostrils breathed fire. The ninth, his conquering **Geryon**. The tenth, his taking **Dio-mede**, king of **Thrace**, who fed his horses with the flesh of the strangers who entered his dominions. The eleventh, his taking the golden apples from the garden of the **Hesperides**, after he had killed the dragon who watched them; and the twelfth, was his dragging **Cerberus** from hell, and delivering the wives of **Theseus** and **Admetus**. He also supported the heavens on his shoulders, to give ease to **Atlas**. He conquered the ri-

ver Achelous ; put Busiris to death ; choaked the giant Anteus ; separated the mountains of Calpe and Abila ; killed Gacus the robber ; tamed the Centaurs ; planted colonies which bore his name, on the streight now called Gibraltar ; killed with his arrows the eagle which fed on Prometheus's liver, and many other heroic actions. At length, Dejaneira, one of his wives, hoping to recover him from his passion for Iole, the daughter of Eurites, king of Œchalia, sent him a shirt stained with the blood of the Centaur Nessus, which Hercules had no sooner put on, than he was tortured with pain, and being unable to support his agonies, erected a pile of wood, to which he set fire, and threw himself into the flames. He was deified after his death, and to pacify Juno, on his being advanced to the heavens, was married to Hebe, the goddess of youth. Both the Greeks and Romans honoured him as a god, and erected temples to him. His victims were bulls and lambs.

HERD, a company of eatable cattle of the larger sort, as cows, oxen, swine, deer, &c. also of wild beasts.

HEREDITAMENTS, whatever immoveable things a person may have to himself and his heirs, by way of inheritance ; and which, if not otherwise bequeathed, descend to him who is next heir, and not to the executor, as chattels do.

This word extends to whatever is inheritable, be it real, personal, or mixed ; and in conveyances, by the grant of hereditaments, manors, houses, lands, rents, &c. will pass.

HEREDITARY, an appellation given to whatever belongs to a family by right of succession, from heir to heir.

* **HEREFORD**, the county town of Herefordshire. It is a city, pretty large and populous, and very pleasantly situated, in a fine champaign country, and is encompassed with two rivers. The government of this city is vested in a mayor, chosen yearly on Michaelmas-day, a high and under steward, twelve aldermen, a common-council, consisting of thirty-one persons, among whom are reckoned the mayor, and five of the aldermen, who are justices. Besides these, they have a recorder, a town-clerk, a sword-bearer, and four serjeants at mace. It had formerly six parish churches, but there are now only three standing, besides the cathedral, which is a very magnificent structure. It was first founded by Mil-

fred, but was rebuilt as it now stands by Robert Locenga, in the reign of the Conqueror. The dignitaries of this see have all of them houses adjoining to the church, and there is a college for the vicars and choiristers, who live in an academical manner, under a governor. There is likewise in this city a well endowed hospital. The trading companies have distinct halls, laws, and privileges, but their only manufacture is gloves, and some other things made of leather. It is twenty-eight miles north-east-by-east of Gloucester, forty-two south-west-by-west of Montgomery, and one hundred and thirty three west-by-north of London. Long. 2. 38. W. Lat. 52. 6. N.

* **HEREFORDSHIRE**, an inland county, of almost a circular form, bounded on the east by Worcestershire and Gloucestershire, on the south by Monmouthshire, on the west by Radnorshire and Brecknockshire, and on the north by Shropshire. It is thirty-five miles in length and thirty in breadth. It contains one city, eight market-towns, and one hundred and seventy-six parishes. The soil of this county is fruitful in corn, particularly wheat and barley, and has the finest wool in England. It is famous for apples, which grow almost every where, and Herefordshire cyder is in great esteem. They have cattle of all kinds, common to the rest of England, but their hogs are reckoned excellent, because they feed much upon apples. The air is pleasant and healthful, though cool, and many people live to a great age, of which we have an instance in the reign of James I. when ten old men and women danced before that king, and all their ages, one with another, amounted to one thousand years. It has several fine rivers, particularly the Wye, the Lug, and the Munow, which meet at last together, and in one channel fall into the Severn sea.

HERESY, the crime of obstinately persisting in opinions contrary to the fundamentals of religion.

HERETIC, a general name for all such persons under any religion, but especially the Christian, as profess or teach religious opinions contrary to the established faith, or to what is made the standard of orthodoxy.

HERISSON, in fortification, a beam armed with a great number of iron spikes, with their points outwards, and supported by a pivot, on which it turns. These serve as a barrier to block up any passage, and

H E R

and are frequently placed before the gates, and more especially the wicket-doors of a town or fortress, to secure those passages, which must of necessity be often opened and shut.

HERMAPHRODITE, one who partakes of both sexes. Most, if not all those reported to be hermaphrodites, are probably no more than mere women, whose clitoris is grown to an exorbitant size, and whose labia pudendorum are become preternaturally tumid.

Among the insect class of animals, indeed, hermaphrodites are very frequent: such are worms, snails; leeches, &c.

HERMAPHRODITE FLOWERS, among botanists. See *Flowers*.

HERMETIC, or **HERMETICAL**, an appellation given to whatever belongs to chemistry, from Hermes Trismegistus, who is supposed to have been its inventor.

HERMETICAL PHILOSOPHY, that which undertakes to solve all the phenomena of nature from the three chemical principles, salt, sulphur, and mercury. A considerable addition was made to the ancient hermetical philosophy by the modern doctrine of alkali and acid. See *Alkali*.

HERMETICAL PHYSIC, the art of healing as founded on the hermetical philosophy.

HERMETICAL SEAL, a method of stopping glass-vessels for chemical operations so very accurately, that nothing can escape. It is done by heating the neck of the vessel in the flame of a lamp, till it be ready to melt, and then twisting it close together with a pair of pincers.

Vessels may likewise be sealed hermetically, by stopping them with a plug of glass well luted into the neck of the vessel; or by inverting another ovum philosophicum over that wherein the matter is contained.

HERMIT, a devout person retired into solitude to be more at leisure for prayer and contemplation.

HERNANDRIA, in botany, the name of a distinct genus of plants. We know only one species of this genus, which is the hernandria, with a large umbilicated ivy-like leaf, commonly called, in the West-Indies, Jack in a box.

HERNIA, in medicine, a tumor formed by the descent of the intestines or omentum out of their place: it is popularly called a rupture.

The preternatural tumors formed at the navel are called omphalocele and exomphalos; those of the scrotum oscheocele; and

H E R

if in other parts of the belly, they are called ventral. A tumor proceeding from a falling out of the intestines, is termed an enterocele; from the omentum, epiplocele; from wind, pneumatocele; from water, hydrocele. They differ also as to their size; some are soft, others hard; some fixed, some moveable, others not without great difficulty, or not at all, returned into the abdomen; the last are called adhesive ruptures. Sometimes the parts prolapsed are so confined, that the wind and fæces can by no means be transmitted; these are denominated incarcerated ruptures; some are free from pain; others very painful, and attended with sickness, vomiting, and many bad symptoms.

The causes are various, though the immediate cause is always some violence offered to the abdomen, and principally the navel.

An omphalocele in children is not very dangerous, and for the most part easily cured. In adults likewise there is no great danger, while the parts are capable of being returned; but if the protrusion of the intestines through a narrow foramen of the navel cannot be returned, it is a very hazardous case; for the blood must be prevented from returning out of the protruded intestines, and the stagnating fluids occasion inflammation, excessive pain and anguish, with vomiting, and indeed the iliac passion; and likewise a mortification of the intestines, followed by a painful death. But if the intestines can be returned, an omphalocele, as well as any other rupture, is sooner cured in children than in adults, by the use of a proper bandage, and the observation of a regular diet and exercise.

There are two methods of cure, the one when the intestines can, the other, when they cannot be returned. In the first case, the intestines and omentum must be returned and bound up tightly, to prevent a relapse. In tender infants, after reposition and reposition, apply a small round plaster to the navel, laying another over that covered with linen or leather, and over this a simple thick compress, as in a recent and slight disorder; then fasten the whole with a simple roller carried several times round the body, taking care, when this is opened, that it be immediately bound up.

When the disorder is inveterate, use a double compress of a less size; and upon that lay a leaden plate, then a larger compress, and proceed as before: but in children, adults, and old men, apply a truss.

suitable to the purpose, furnished with a peculiar plate, and fastened round the belly; but before you use this bandage, you should lay on the navel a sound strengthening plaster, and upon that a sticking plaster with a compress: but if the aperture is so narrow that the intestines cannot be repelled, and the patient is troubled with a vomiting and acute pains, apply proper clysters and emollient cataplasms. If you still find the intestines unfit for reposition, inject the smoke of tobacco into the anus, till it give a stool, and they are relaxed. If there is an inflammation in the intestines, you must immediately open a vein, and bleed plentifully; by this, with a gentle pressure of the hand, the prolapsed parts return into the abdomen: after this, you must press the orifice with your fingers, apply a compress, and then a proper linen bandage as before.

If all this prove ineffectual in twenty or twenty-four hours, immediate recourse must be had to the surgical operation, which is thus performed: the patient is laid on a bed or table, with his head somewhat low, but his belly and buttocks elevated, and is fastened down to prevent his moving; then the skin over the navel is held transversely, and, being drawn tight, an incision is carefully made with a knife, till you have uncovered the intestines. The best instrument for this incision is Morand's bistouri gastrophique, or Le Dran's bistouri herniaire.

Where the intestines are thus replaced, the wound being pressed by an assistant, should be bound up. After the first dressing, the patient must keep quiet, and the bandage remain for three or four days, unless extraordinary symptoms require the contrary; and after the first opening, it may be dressed every day; and when it is healed, a proper bandage is still necessary, but adults and old men must wear a truss all their lives. As to Petit's method of cure, see *Garangeot's Operat. Chirurg.*

The celebrated method of the prior de Cabrier for curing an enterocele, or any rupture, without bandage or section, was purchased about the end of the last century by Lewis XIV. and then made public for the good of mankind. It is done by spirit of salt mixed with red wine, and drank for seven mornings fasting, the patient remaining for four or six hours afterwards without taking either food or drink: but if it should not agree with the stomach, then only every other day. For a child, from two years old to six, three or four

drops in a spoonful or two of red wine; from six years to ten, mix a dram of the spirit with a pint of wine for seven doses. It is to be continued, if necessary, for a fortnight longer in the same manner. From ten to fourteen years, the quantity of the spirit may be increased to two drams: from fourteen to eighteen, two drams and a half; and after eighteen, five drams. During four months, after this course is begun, a steel truss must be worn night and day, exactly fitted to the rupture.

The patient ought never to sit down, but either stand or lie, and neither run nor ride, and take great care to commit no error in diet. Under the truss the following plaster is applied to the part, being first shaved. Take of mastich half an ounce; labdanum, three drams; hypocyttis, one dram; three dried Cyprus nuts; of sealed earth, one dram; black pitch, three ounces; Venice turpentine, one dram; yellow wax, one ounce; dry comfrey-root, half an ounce: make into a plaster according to art.

HERO, in ancient mythology, a great and illustrious person, of a mortal nature, though supposed by the populace to partake of immortality; and, after his death, placed among the number of the gods. Heroes were persons partly of divine and partly of human extraction, being begot between a deity and a mortal, and coincides with what we otherwise call a demigod; such was Hercules, who was the son of Jupiter by Alcmena: accordingly Lucian describes a hero to be a medium between a god and man, or rather a composition of both.

HERO is also used in a more extensive sense for a great, illustrious, and extraordinary personage; particularly in respect of valour, courage, intrepidity, and other military virtues.

* HERO, in fabulous history, a priestess of Venus, lived at Abydos, in a tower situated on the bank of the Hellespont. She being beloved by Leander, who lived at Sestos, on the other side of the strait, he every night swam over to visit her, but the light being put out in a stormy night, the youth missed his way, and was drowned; on which Hero threw herself into the sea, and was also drowned.

HERO of a Poem, or Romance, is the principal personage, or character therein. See *Character*.

The hero of the *Iliad* is Achilles; of the *Odyssey*, Ulysses; of the *Æneid*, Æneas; of Tasso's *Jerusalem*, Godfrey

of Bulloign; of Milton's *Paradise Lost*, Adam; though Mr. Dryden will have the Devil to be Milton's hero, as he gets the better of Adam, and drives him out of Paradise. Many of the critics find fault with the hero of the *Æneid*, for being too delicate, wanting the fire, firmness, and uncontrollable spirit, remarkable in the hero of the *Iliad*. Piety, tenderness, and submission to the gods, are virtues of the middle class of mankind; they do not strike enough for a hero, who is to be the instrument of such notable exploits.

In answer to this, F. Bossu observes, that *Æneas's* character was not to be formed on the model either of Achilles or Ulysses; nor to be of the same kind with them, as the fable and design of the *Æneid* were very different from those of the *Iliad* and *Odyssee*. Virgil's design was to persuade the Romans to receive a new form of government, and a new master; who must have all the qualities requisite for the founder of a state, and all the virtues which make a prince beloved.

HEROIC, something belonging to a hero, or heroine: thus,

HEROIC AGE, that age or period of the world, wherein the heroes are supposed to have lived.

HEROIC VERSE, that wherein heroic poems are usually composed; or it is that proper for such poems. In the Greek and Latin, hexameter verses are usually denominated heroic verses, as being alone used by Homer, Virgil, &c.

Alexandrine verses of twelve syllables were formerly called heroic verses; but later writers use verses of ten syllables.

HEROINE, a woman of an heroic spirit, or who makes the principal personage in an heroic poem.

HERON, in ornithology, a bird of the ardea kind, with a hanging crest. The common heron is a tall bird, measuring more than four feet from the point of the beak to the tip of the toes. Its head is covered with short white feathers; only from the hinder part, there hangs a crest of very long black feathers; the upper part of its body is of a dusky bluish grey, the under part white, and the thighs yellowish.

HERPES, in medicine, a bilious pustule, which breaking out in different manners upon the skin, accordingly receives different denominations. If they appear single, as they frequently do in the face, the base is inflamed, and the top pointed;

and having discharged a drop of matter, the redness and pain go off, and they dry away. There is another sort more corrosive and of greater malignity, when a cluster of pustules rise in a ring, accompanied with smart, and sometimes with great itching; this species is termed *serpigo*, and vulgarly the *tetter*, or *ring-worm*. Another kind of this disease appears in large clusters upon the neck, breast, loins, &c. attended with a slight fever and inflammation. The heads are white and mattery, which are succeeded by a small round scab resembling millet seed, whence its name, and vulgarly called *shingles*.

HERRING, in ichthyology, a species of clupea, so well known, that a description is quite unnecessary.

HERRING Fishery. Herrings are chiefly found in the North sea. They are a fish of passage, and commonly go in shoals, being very fond of following fire or light, and in their passage they resemble a kind of lightning. About the beginning of June, an incredible shoal of herrings come from the north on the surface of the sea; their approach is known by the hovering of sea fowl in expectation of prey, and by the smoothness of the water; but where they breed, or what particular place they come from, cannot be easily discovered. As this great shoal passes between the shores of Greenland and the North Cape, it is probably confined, and as it reaches the extremities of Great-Britain, is necessarily divided into two parts. For we find one part of the herrings steering west, or south-west, and leaving the islands of Shetland and Orkney to the left, pass on towards Ireland, where being interrupted a second time, some keeping the shore of Britain, pass away south down St. George's channel; while the other part, edging off to the south-west, coast the western ocean, till they reach the south shore of Ireland, and then steering south-west, join the rest in St. George's channel. The other part of the first division made in the north, parting a little to the east and south-east, pass by Shetland, and then make the point of Buchanness, and the coast of Aberdeen, filling as they go, all the bays, firths, creeks, &c. with their innumerable multitudes. Hence they proceed forward, pass by Dunbar, and rounding the high shores of St. Abbe's Head, and Berwick, are seen again off Scarborough; and even then not diminished in bulk, till they come to Yarmouth roads, and from thence to the mouth of

the Thames, after which, passing down the British Channel, they seem to be lost in the Western ocean.

The vast advantage of this fishery to our nation is very obvious, when we consider, that though herrings are found upon the shores of North America, they are never seen there in such quantities as with us, and that they are not to be met with in considerable numbers in any of the southern kingdoms of Europe, as Spain, Portugal, or the south parts of France on the side of the ocean, or in the Mediterranean, or on the coast of Africa. There are two seasons for fishing herrings, the first from June to the end of August, and the second in autumn, when the fogs become very favourable for this kind of fishing. The Dutch begin their herring-fishery on the 24th of June, and employ no less than two thousand vessels therein called *busses*, being between forty-five and sixty tons burden, and carrying three or four small cannon. They never stir out of port without a convoy, unless there be enough together to make about eighteen or twenty cannon among them, in which case they are allowed to go in company. Before they go out, they make a verbal agreement, which has the same force as if it were in writing. The regulations of the admiralty of Holland are partly followed by the French, and other nations, and partly improved and augmented with new ones; as, that no fisher shall cast his net within a hundred fathoms of another boat: that while the nets are cast, a light shall be kept on the hind part of the vessel: that when a boat is by any accident obliged to leave off fishing, the light shall be cast into the sea: that when the greater part of a fleet leaves off fishing, and casts anchor, the rest shall do the same, &c.

Some years ago a company was erected in England for the white-herring fishery; but from what cause we cannot pretend to say, it continued in a languishing state for a considerable time, and is now quite extinct.

Curing and preparing HERRING. The commerce of herring, both white or pickled, and red, is very considerable. The white Dutch herrings are the most esteemed, being distinguished into four sorts, according to their sizes; and the best are those that are fat, fleshy, firm, and white, salted the same day they are taken with good salt, and well barrelled. The British herrings are little inferior, if not equal to the Dutch; for in spite of all their endea-

vours to conceal the secret, their method of curing, salting, or casking the herrings, has been discovered, and is as follows. After they have hauled in their nets, which they drag in the sterns of their vessels backwards and forwards in traversing the coast, they throw them upon the ship's deck, which is cleared of every thing for that purpose: the crew is separated into sundry divisions, and each division has a peculiar task: one part opens and guts the herrings, leaving the melts and roes; another cures and salts them, by lining or rubbing their inside with salt; the next packs them, and between each row and division they sprinkle handfuls of salt; lastly, the cooper puts a finishing hand to all, by heading the casks very tight, and stowing them in the hold. It is customary with us to wash the herrings in fresh water, and steep them twelve or fifteen hours in a strong brine, before we proceed to barrel them.

Red HERRINGS must lie twenty-four hours in the brine, inasmuch as they are to take all their salt there, and when they are taken out, they are spitted, that is, strung by the head on little wooden spits, and then hung in a chimney made for that purpose: after which, a fire of brushwood which yields a deal of smoke, but no flame, being made under them, they remain there till sufficiently smoked and dried, and are afterwards barrelled up for keeping.

HERSE, in fortification, a lattice or portcullice, made in the form of a harrow, and stuck full of iron-spikes. It is usually hung by a rope, fastened to a moulinet, which is cut in case of surprize, or when the first gate is broken with a petard, to the end that it may fall and stop up the passage of the gate, or other entrance of a fortress.

These hersees are also often laid in the roads, with the point upwards, to incommode the march both of the horse and infantry.

HERSILLON, in the military art, a sort of beam, &c. between ten and twelve feet long, whose two sides are full of spikes, to incommode both horse and foot.

HESPER, *Hesperus*, in astronomy, the evening star, Venus being so called when she sets after the sun.

HESPERIDES, in ancient mythology, were the daughters of Hesperus, which were three in number, *Ægle*, *Arethusa*, and *Hesperethusa*. They are represented by the ancients as having the

keeping

keeping of certain golden apples on the other side the ocean. The poets assign them a dragon to watch the fruit: this dragon Hercules slew and carried off the apples.

HESPERIS, dame violet, in botany, a genus of plants.

HETEROCLITE, among grammarians, one of the three variations in irregular nouns, and defined by Mr. Ruddiman a noun that varies in declension; as *boc vas, vasis; bæc vasa, vasorum*. Other grammarians take the word heteroclite in a larger sense, applying it to all irregular nouns.

HETERODOX, in polemical theology, any thing contrary to the faith and doctrines of a true church.

HETEROGENEOUS, or **HETEROGENEAL**, something that consists of parts of dissimilar kinds, in opposition to homogeneous. See *Homogeneous*.

HETEROGENEOUS, in mechanics, such bodies whose density is unequal in different parts of their bulk; or they are such whose gravities in different parts are not proportionable to the bulks thereof: whereas bodies equally dense or solid in every part, or whose gravity is proportionable to their bulk, are said to be homogeneous.

HETEROGENEOUS NOUNS, one of the three variations in irregular nouns; or such as are of one gender in the singular number, and of another in the plural, as *boc cælum, bi cæli*.

HETEROGENEOUS QUANTITIES are those which are of such different kinds, as that one of them taken any number of times, never equals or excels the other.

HETEROSCII, in geography, commonly denotes those inhabitants of the earth in the temperate zones, whose shadow at noon is always projected the same way, either northward or southward.

Heteroscii however, strictly, denotes those inhabitants which, during the whole year, have their noon-tide shadows projected different ways from each other. Thus the inhabitants of the northern temperate zone are heteroscii with regard to those of the southern. The inhabitants of one part of the torrid zone are heteroscii with regard to those of the rest, and to those of one of the temperate zones, except at the solstices; and even at that time, all of the torrid zone are heteroscii with regard to those of the temperate zones: but as the people of the torrid zone have their shadow now on this, and then on that side, they are called amphiscii. See *Amphiscii*.

HEXAEDRON, *Hexabedron*, in geometry, one of the Platonic or five regular bodies, being a solid consisting of six equal sides or faces, popularly called a cube.

The square of the side of a hexaedron is in a subtriple ratio to the square of the diameter of the circumscribed sphere. Hence the side of the hexaedron is to the side of the sphere it is inscribed in, as 1 to $\sqrt[3]{3}$, and consequently incommensurable thereto.

HEXAGON, in geometry, a figure of six sides, and as many angles.

If the sides and angles be equal, it is called a regular hexagon. The side of a regular hexagon inscribed in a circle is equal to the radius of that circle; hence a regular hexagon is inscribed in a circle, by setting the radius off six times upon the periphery: As 1 to 1.672, so is the square of the side of any regular hexagon to the area thereof nearly.

To describe a hexagon on a given line AB (*Plate XXV. fig. 1.*) draw an equilateral triangle ABC, and the vertex C will be the center of a circle, which will circumscribe the hexagon required.

HEXAMETER, in the Greek and Latin poetry, a verse consisting of six feet.

The first four feet of a hexameter may be either dactyls or spondees; but the last foot should in strictness be a spondee, and the last but one a dactyl, as in Homer and Virgil.

Hexameters are divided into heroic, which should be grave and majestic; and into satyrical, which may be more negligent, as those of Horace. Epic poems consist of hexameters alone; elegies and epistles ordinarily consist of hexameters and pentameters alternately.

The modern languages are not at all fit for this kind of verse, whose cadence depends altogether on long and short syllables.

HEXANDRIA, in botany, a class of plants, comprehending garlic, hyacinth, meadow saffron, &c.

HEXASTYLE, in architecture, a building with six columns in front.

HIATUS properly signifies an opening, chasm, or gap; but it is particularly applied to those verses where one word ends with a vowel, and the following word begins with one, and thereby occasion the mouth to be more opened, and the sound to be very harsh.

HICCUP, or **HICCOUGH**, *Singultus*, in physic, a spasmodic, convulsive, interrupted, and uneasy concussion of the dia-

phragm and some of the parts affixed to it, made in inspiration, and accompanied with a sonorous explosion of the air through the mouth.

Hiccups are divided into two species; the former, when the immediate cause of the disorder is lodged in the diaphragm itself; and the latter, when the cause resides in the stomach, whose vellication is propagated to the diaphragm.

Every hiccup does not require a cure; but a morbid hiccup calls for the assistance of the physician, who is principally to follow three intentions of cure; the first is to mitigate and allay the preternatural, spasmodic, and convulsive motions; the second is to remove the material causes; and the third is to restore the parts affected and weakened. The first intention is answered by gentle antispasmodic and anodyne substances, as amber, cinnamon, saffron, and castor. An ounce and a half of the oil of sweet almonds, mixed with a few drops of the distilled oil of dill, is by some thought a specific for the hiccup. But the physician is chiefly to pursue the second intention, which is to remove the material causes. The peccant matter is therefore to be duly concocted, and then to be eliminated either by vomit or stool; the former is answered by four or six grains of the powder of squills, mixed with three grains of purified nitre; and the latter by preparations of manna and rhubarb. The celebrated Sydenham tells us that he has cured people in years of this disorder, by giving them two drams of diascordium at a dose, when the seeds of dill and other celebrated specifics have proved ineffectual.

HIDE, the skin of beasts, but particularly applied to those of large cattle, as bullocks, cows, horses, &c. See *Skin*.

HIDE of Land was such a quantity of land as might be plowed with one plough within the compass of a year, or so much as would maintain a family; some call it sixty, some eighty, and some an hundred acres.

The distribution of this kingdom by hides of land is very ancient, mention being made of it in the laws of king Ina. Henry I. had three shillings for every hide of land, in order to raise a dowry for his daughter: this tax was called hidage.

HIDE-BOUND, among farriers, a distemper in horses when the skin sticks so fast to the back and ribs, that the hand cannot separate the one from the other without great difficulty; his body is at the same time lean, his back-bones stand up,

his guts are for the most part deficient in moisture, and his dung dry and more offensive than common.

If a horse become hide-bound by hard riding and ill keeping, he may be cured by good keeping. If it be the effect of a fever or some other disease, if that be cured which is the cause, the effect will cease; but if he has no fever upon him, and he is hide-bound only from lowness of blood and spirits, give him boiled barley, white water, or the like, and when his flesh is raised, harden it with good oats, beans, and moderate exercise.

HIERACHIUM, hawkweed, in botany, a genus of plants.

HIERARCHY, among divines, denotes the subordination of angels. See *Angel*.

Some of the rabbins reckon four, others ten, orders or ranks of angels; and give them different names, according to their different degrees of power and knowledge. Dionysius the Areopagite, the jesuit Celler, and many others, have gone so far as to settle a kind of ceremonial or rule for the precedence of angels, as seraphim, cherubim, thrones, dominions, principalities, &c.

HIERARCHY likewise denotes the subordination of the clergy, ecclesiastical polity, or the constitution and government of the Christian church, considered as a society.

HIEROGLYPHICS, in antiquity, mystical characters, or symbols, in use among the Egyptians, as well in their writing as inscriptions; being the figures of various animals, the parts of human bodies, and mechanical instruments. But besides the hieroglyphics in common use among the people, the priests had certain mystical characters, in which they wrapped up and concealed their doctrines from the vulgar. It is said, that these something resembled the Chinese characters, and that they were the invention of Hermes. Sir John Marsham conjectures, that the use of these hieroglyphical figures of animals, introduced the strange worship paid them by that nation; for as these figures were made choice of, according to the respective qualities of each animal, to express the qualities and dignity of the persons represented by them, who were generally their gods, princes, and great men, and being placed in their temples, as the images of their deities; hence they came to pay a superstitious veneration to the animals themselves.

HIGH,

H I L

HIGH, *Altus*, a term of relation, importing one thing's being superior or above another: thus we say, a high mountain, the high court of parliament, high relieve, &c.

HIGH-WATER, the state of the tide when highest, or the time just before it begins to ebb. See *Tide*.

HIGH-WAY, a free passage for the king's subjects, on which account it is called the king's high-way, though the freehold of the soil belong to the lord of the manor, or the owner of the land. Those ways that lead from one town to another, and such as are drift or cartways, and are for all travellers in great roads, or that communicate with them, are high-ways only; and as to their reparation, are under the care of surveyors.

There were several laws in force concerning high-ways, but an act of parliament passed in 1773, that is the 13th of George III. that reduced into one act all the laws concerning high-ways, and repealed all the preceding ones.

HIGHNESS, a title given to princes. Before king James I. the kings of England had no other title but that of highness; which was also the case of the kings of Spain before Charles V.

At present all the sons of crowned heads are stiled royal highness, as the electors of Germany are electoral highness.

HILARY-TERM, among lawyers. See *Term*.

HILL, in the natural history of the earth. See *Mountain*.

Hills are of great use in a garden; as,

1. They serve as screens to keep off the cold and nipping blasts of the northern and eastern winds.

2. The long ridges and chains of lofty mountains, being generally found to run from east to west, serve to stop the evagation of those vapours towards the poles, without which they would all run from the hot countries, and leave them destitute of rain.

3. They condense those vapours, like alembic heads, into clouds; and so, by a kind of external distillation, give origin to springs and rivers; and by amassing, cooling, and conspitting them, turn them into rain, and by that means render the fervid regions of the torrid zone habitable.

4. They serve for the production of a great number of vegetables and minerals, which are not found in other places.

H I P

It hath been found by experiment and calculation, that hills, though they measure twice as much as the plain ground they stand upon, yet the produce of the one can be no more than the other; and therefore in purchasing land, the hills ought not to be bought for more than their superficial measure, i. e. to pay no more for two acres upon the side of an hill, than for one upon the plain, if the soil be equally rich.

It is true, that those lands that are hilly and mountainous, are very different, as to their valuable contents, from what are found in flat and plain ground, whether they be planted, sown, or built upon; as for example:

Suppose an hill contains four equal sides, which meet in a point at the top; yet the contents of these four sides can produce no more grain, or bear no more trees, than the plain ground on which the hill stands, or than the base of it; and yet by the measure of the sides there may be double the number of acres, rods, and poles, which they measure on the base or ground-plot.

For as long as all plants preserve their upright method of growing, hilly ground can bear no more plants in number than the plain at the base.

Again, as to building on a hill, the two sides of an hill will bear no more than the same number of houses that can stand in a line at the base.

And as to rails, or park-paling over an hill, though the measure be near double over the hill to the line at the bottom, yet both may be inclosed by the same number of pales of the same breadth. *Miller's Gard. Dict.*

HIN, a Hebrew measure of capacity for things liquid, containing the sixth part of an epha, or one gallon two pints, or two thousand five hundred and thirty-three solid inches, English measure.

HIND, a female stag in the third year of its age.

HIND CALF, a male hart, or hind, in the first year. She fawns in April or May.

HIND, or **HINE**, a husbandman's servant. Thus a person who oversees the rest, is called a master hine.

HINGES, in building, those iron or brass joints, whereby doors, tables, &c. open, shut, or fold, &c. Of these there are various species.

HIP, dog rose, a species of wild briar. It is one of the largest plants of the rose kind;

kind ; grows wild in hedges ; and flowers, as the garden sorts in June.

The flowers of this species, of an agreeable but weak smell, and in taste bitterish and roughish, are said to have a greater degree of laxitive virtue than those of the damask rose, together with a mild corroborating or restraining quality. The fruit, the only part of a dog-rose made use of in medicine among us, is agreeably dulco-acid, and stands recommended as a cooling restraining, in bilious fluxes, sharpness of urine, and hot indispersions of the stomach : the fresh pulp is made in the shops into a conserve, by mixing three ounces of it with five of fine sugar. The pulp should be separated with great care from the rough prickly matter which incloses the seeds ; a small quantity of which, retained in the conserve, is apt to occasion an uneasiness at the stomach, pruritus about the anus, and sometimes vomiting.

HIP-GOUT, Sciatica. See *Gout* and *Sciatica*.

HIP-ROOF, among carpenters, called also Italian roof, is a roof which has neither gable-head, thread-head, nor jerken-head, by which is meant such heads as are both gable and hip at the same end ; for it is a gable, or up-right as high as the collar-beam, and then there are two short hips, which shut up with their tops to the tops of a pair of rafters, which country carpenters call singlars.

HIPPOCAMPUS, the sea-horse, in ichthyology, the square-bodied syngnathus, with no fin at the tail. It is five inches long, and where thickest, about an inch in diameter, being a very singular and rare fish. The tail usually curls up in the drying, and its head being bent down, gives it a rude resemblance to a horse ; whence the name.

HIPPOCENTAUR, in antiquity, a fabulous animal, half a man, half horse.

What gave rise to the fable of hippocentaurs, was this. The Thessalians are said to have been the first inventors of the art of breaking horses ; and being first seen on horseback, they seemed to make but one body with the horses ; whence the origin of the fable.

HIPPOCRAS, an infusion of aromatic powders in wine, which is afterwards edulcorated with sugar and honey ; being so called, because that, when the infusion is finished, it is strained through Hippocrates's sleeve.

It is prepared of various aromatics and

other ingredients, according to the different intentions to be answered.

* **HIPPOCRATES**, the most celebrated physician of antiquity, was born in the island of Coos, about the four hundred and sixtieth year before the Christian æra. Having collected the observations of his predecessors, and added to them his own, he published the first body of physic, a work which has been admired by the learned even to the present time. Hippocrates had no less probity than learning ; he was of the greatest service to the Greeks during a plague which broke out on the coast of Illyrium, and spread over all Greece. A contagious disease making great havock in Persia, king Artaxerxes made him great offers to induce him to come and put a stop to the ravages it made ; but Hippocrates replied, that he would never give assistance to the enemies of Greece. He died in the three hundred and fifty-sixth year before the Christian æra, aged one hundred and four. The best edition of his works is that of Foetius, in Greek and Latin. His Aphorisms, Prognostics, and all he has wrote on the symptoms of diseases, justly pass for master-pieces.

HIPPOCRATES'S SLEEVE, a kind of filtre or straining bag formed by joining the opposite angle of a square piece of flannel in form of a pyramid, and used to strain syrups, decoctions, &c. for clarification.

HIPPODROME, in antiquity, the course where horse-races were performed.

HIPPOPOTAMUS, the river horse, a genus of quadrupeds, of the order of the jumenta.

The hippopotamus is a native of Africa, passing a great part of its time under water, in the rivers of Nile and Niger ; but comes on shore to sleep and breed. It is a large unwieldy animal, as big as an ox.

HIRUDO, the leech, in zoology, a well known naked insect, with a flattened but not jointed body, and broader at the end than elsewhere, and the skin soft and glossy.

The common leech grows to two or three inches in length, and is of a blackish colour, variegated with yellow.

HISSING LETTERS, among grammarians, are S, X, and Z, so called on account of their harsh sound.

HISTORICAL, something that relates to history : thus we say, historical truth, histo-

historical style, historical narration of facts, &c. See *History*.

HISTORIOGRAPHER, a professed historian, or writer of history.

HISTORY, an account of past transactions, narrated with such important circumstances as are proper to be transmitted to posterity, and that in a regular continued series.

History is, of all others, the most difficult province. In other subjects there is a greater latitude for the writer's imagination; but, in history, he is confined to the occurrences he relates; and these, as they are not alike entertaining, require force and judgment in the narration, to make them all agreeable. The richest fields of history are scenes of action and commotion, where nations are agitated by wars abroad, or factions at home. The most delicate part of an historian, which requires the deepest penetration, and soundest judgment, are the councils of states and princes, the springs of action, the characters of men, the interest of parties, their different views, &c. History will not admit those decorations other subjects are capable of: the passions are not to be moved with any thing but the truth of the narration. All the force and beauty must lie in the order and expression. To relate every event with perspicuity, in such words as best express the nature of the subject, is the chief commendation of an historian's style. The colours facts are painted in, the strength and significance of the several actions, the confusion of a battle, the distractions of a tumult so sensibly depicted, that in reading we seem to see them; this is the art and perfection of an historical style. An historian must not only write impartially, but nobly. He that speaks to the whole world, and to all ages, that is the instructor of mankind, that pronounces the destiny of many great men, and fixes their character with posterity, what strength of genius can be sufficient for so important an enterprize? He must be capable of forming great and noble conceptions of things, and giving such an exalted turn to his narration, as may truly comport with the dignity of his subject.

During the first ages, we have little or no history of the transactions of mankind; but that of Moses, whose account is chiefly confined to the rise, religion, laws, and government of the Jews. It is presumed he wrote the principal part of

his history about the year of the world 2550, and had good opportunities of knowing the truth of his relations. He gives a regular account of the Jewish affairs, from the creation to the year 2550: from this period the sacred history is carried on by different writers, and continued down in the books of Joshua, Judges, Ruth, Samuel, Kings, Chronicles, Ezra, and Nehemiah, to the year of the world 3581.

As to prophane history, till almost the time where the Scripture records end, we have little remains of it, but what are either broken or confused, or fabulous: for, from the creation to the flood, we have no credible account of things, but that of Moses; and from the flood to the reign of Cyrus, the remains of antiquity are so broken and confused, that we have very little prophane history of credit during this long and dark period. As to the Chaldean History of Berosus, and the Egyptian of Manetho, they were both wrote since Herodotus, and we have only some fragments of them preserved by Josephus, Eusebius, &c.

The Greeks, as they have not been noted for their veracity in any respect, so their integrity in this particular always has been so questionable, that *Græcia mendax* has been stigmatized in history. We have no tolerable account from them before the Olympiads; the times before these were the fabulous ages; and when the historical commences, our accounts are not much better; for, not having had originally any public annals, and amongst their ancient authors the poets have the first rank, we may easily imagine what accounts are to be expected from those who are either to follow uncertain traditions or the poets. Accordingly their first accounts were very loose, and rather poems than histories, which they have been charged with by the Romans, and particularly Quintilian compares the liberty they took to a poetic licence: but Josephus tells them their accounts of things are all novel; that they have no author more ancient than Homer; that Hellanicus differs from Acusilaus; he corrects Hesiod, and Hellanicus Ephorus; he again is corrected by Timæus, as he is by others, and Herodotus by all, who has been styled the father of history, though he might with equal justice be called the parent of fable.

The historians from whom the Grecian and Roman history may be collected, are
Thucy-

Thucydides, Diodorus Siculus, Lucian, Justin, Xenophon, Ctesias, Polybius, Dionysius Halicarnassensis, Philo, Apion, Cornelius Nepos, Q. Curtius, Plutarch, Ælian, Arrian, Appian, Diogenes Laertius, Dio Cassius, Herodian, Eunappus, Zosimus, and Photus.

As to the Roman History, it at first only consisted of simple notes drawn up by the pontifex maximus, who regularly set down every year whatever passed of considerable moment in the state, either in war or peace; and this custom, established very early at Rome, subsisted till the year A. U. C. 629, or 631. These memoirs were called the great annals. History now began to quit this antique garb, and to appear in public with more decency. The poets were the first who conceived a design of improving and adorning it. Nævius composed a poem on the first Punic war, and Ennius wrote the annals of Rome in heroic verse. History at length assumed a regular form, and appeared in prose. Q. Fabius Victor is the most ancient of the Latin historians; he lived in the time of the second Punic war. The historians, whose writings are come down to us, are, Sallust, Livy, Cæsar, Paterculus, Tacitus, Q. Curtius, Suetonius, Lucius Florus, Justin, Aurelius Victor, Ammianus Marcellinus, and Eutropius. Authors of the lives of the Roman emperors, from Adrian to Carinus, are, Spartianus, Lampridius, Vulcatius, Capitolinus, Pollio, and Vopiscus, who all lived in the reign of Dioclesian. If we have regard to only one condition of history, namely, its truth, we shall find that most of the above authors are faulty in that particular.

There are some works in English very useful for the understanding of ancient history, as Hind's History of Greece, Potter's Greek Antiquities, Lewis's Hebrew Antiquities, Kennet and Danet's Roman Antiquities, Prideaux and Shuckford's Connexions, Echard's Roman History, Translation of Josephus, Rollin's Ancient History, Universal History, Bunde's Translation of the Roman History, Nicholson's Historical Library, Kearne's *Ductor Historicus*, and Rawlinson's Method of Studying History: the two last particularly will give the reader a general view of universal history, and direct to the best editions of almost all the historians extant.

The great disadvantage our most celebrated historians seem to labour under, is

too tedious an interruption by the insertion of laws, statutes, and records, in the body of their narration, at least in making too copious a recital of them; whereas they had better have been mentioned only in general, and thrown by themselves into an appendix.

History is distinguished with regard to its matter and its form; with regard to its matter, it is either sacred or natural, civil, personal, or singular.

Method of studying HISTORY. Persons who read history merely for amusement, or having in view some particular branch of learning, attend only to certain branches of history, are not confined to that order and connection, which is absolutely requisite for obtaining a proper knowledge of history; the most regular, as well as successful way of studying which, is to begin with an epitome of universal history, and afterwards apply to the history of particular nations and commonwealths: for the study of particular histories presupposes, or, to speak more properly, is only extending the knowledge of particular parts of universal history. Unless this be our plan, we shall only fill the memory with some events, which may be done without applying to history, or pretending to the knowledge of it.

HISTORY, in painting, denotes a picture composed of divers figures, or persons, representing some transaction, either real or feigned. See *Painting*.

Natural HISTORY. See *Natural*.

HITHE, or HYTHE, in our old writers, denotes a port, wharf, or small haven, to embark, or land wares at; as Queenhithe, &c.

HIVE, *Alveare*, in country affairs, a convenient receptacle for bees.

HIVING of Bees, the placing a swarm of bees in a hive, in order to have the profit of their labours.

When a swarm of bees has left an old hive, and is placed in form of a cluster hanging down from the branches of some shrub or loose bush, the hiving is extremely easy, and may be done in half an hour after the time of their being still, and calm in the cluster; or it may be let alone till an hour or two before sun-set, provided that the sun do not shine too vehemently upon the place where they are, for that would disquiet them, and force them to rise; and in that case they usually take a long flight before they settle again, and are very often lost; this however may at any time be prevented, by placing

placing an artificial screen before them, composed either of a coarse cloth, or of a few branches of trees well covered with leaves.

When they are placed in a hive, they very soon find themselves much better lodged than in the place they had provided for themselves, and they usually stay in it, and begin to work the next morning.

It might appear a very difficult task to get so large a number of bees into a hive, but it is much less so than it appears to be. They will often take possession of the hive of their own accord, when it is hung over them; but the shortest way is to hold the hive under the branch where they are, and then sweep them down into it. This may be done with the branch of a tree with leaves on it, or with the hand armed with a strong glove, and the face covered. But there are country fellows who will go without any sort of defence, and with their naked hand sweep them carefully off the bough into the hive, which they hold in the other hand underneath.

If it be about noon that the swarm is taken into the hive, it must not be removed from the place before evening; and in the mean time it must be sheltered from the too violent heat of the sun, by the shade of the trees; or, if that be not sufficient, a sort of screen must be made for it, either of a coarse cloth properly supported, or of branches of trees with their leaves on. In this manner it must remain till sun-set, and then the hive must be gently lifted up, and carried to the place where it is to remain, and the next morning the bees will be seen as busy at their work in it, as the old swarm in their hive.

Bees often hang themselves in a long cluster from the young shoots, or small branches of high trees; and in this case many different expedients are to be used to hive them, according to the circumstances of their position. The common method is for one man to climb the tree with a long staff in his hand, and another to mount a ladder placed against the tree, and hold the hive under the swarm, while the other sweeps them into it with his staff; and when the bough on which they hang is so far from the body of the tree, that this is impracticable by the ladder, the hive is to be fixed to the end of a long pole, and by that means suspended under the swarm while they are swept into it. When all this is imprac-

ticable, by reason of the great height of the branch on which the swarm hangs, a large cloth is to be spread on some of the lower branches, and the whole swarm swept down in a cluster upon it: this is then to be thrown carefully to the ground, and another person is to be ready there, to whelm the hive over the greater part of the cluster, and the rest will usually soon creep into it, and join them.

Another method of getting a swarm from a branch of a high tree, is to cut off the branch with a saw, as gently and with as little disturbance to the bees as possible. In this case, when the branch is off, a man may carefully descend with it, and the bees will not quit their hold, but will be all carried where he pleases with it, and may by that means be very easily put into the hive.

Sometimes the bees which go out in a swarm, fix upon a hole in a wall, or a hollow trunk of a tree, for the assembling themselves in.

This is a much better choice for them than the branch of a tree, but it is much worse for the person who is to hive them; for they are very difficult to be got out of these places. The common way of the country people is to attack these swarms in the middle of a cold night, and they then enlarge the opening from without, and, placing the hive under it, scoop the bees out of their nest with a ladle, and put them into the hive.

It usually happens that there are more than one young female in the hive, at the time when the swarm goes out; and it is not uncommon for two of them to go out with the swarm. In this case the swarm constantly divides into two bodies, and on whatever branch it fixes, there are seen two clusters of bees, one placed near the other. Each of these is a complete swarm, and has its female, but one of them is often much more numerous than the other; and as the bees always love to live in large communities, the bees of the smaller cluster become tired of their condition, and by degrees join the larger; so that this is seen to increase, and the other to decrease in size every moment, till at length there remains no more of the smaller swarm than a few faithful creatures, forming a sort of guard about the female. In this case, it is in vain for them to think of forming a community by themselves, and they finally, with the female, join the other swarm; so that the new swarm has two females. *Reaumur's Hist. Ins.* T t HOARSE

HOARSENESS, *Rauco*, a preternatural roughness of the voice. The part affected is the aspera arteria, particularly the larynx. This is a sort of catarrhus indispotion arising from a too great acrimony, thinness, or saltness of the lymph. *Spermaceti*, decoct. *rapar.* and *rob. passular.* are approved remedies in this disorder.

HOASE, among sailors, a piece of canvas sewed together at the sides, and made into the form of a tube, to convey water from one place to another.

HOD, a well known instrument used by labourers to carry bricks, mortar, &c. in, at the building, or repairing of houses, &c.

HOE, in country affairs, a tool made like a cooper's addz, to cut up weeds in gardens, fields, &c. This tool is commonly called the hand-hoe: for other sorts of hoes, see the next article.

HOEING, according to Tull, is the breaking or dividing the soil by tillage, while the corn, or other plants, are growing thereon. It differs from common tillage, which is always performed before the corn or plants are sown or planted, or in the time of performing it; and it is much more beneficial to the crops than any other tillage. This sort of tillage is performed various ways, and by means of different instruments.

Transplanting is nearly allied in its nature to hoeing, but it is much inferior. The nature of this will not admit of its being a general thing; and even if it would, hoeing is better: for by transplanting, the plants can only be kept up to a certain period, after which they will not bear it; but hoeing may be used to them with advantage, to their utmost standing, and make them vigorous all the while.

The roots of a plant are all necessarily broken off in transplanting, and it requires some time for it to strike a whole set of new ones; and if the earth about it is not kept thoroughly moistened all this time, the new-formed roots will not be able to shoot, and the plant will starve in the midst of plenty: but, on the contrary, in hoeing, the same advantage of a new pasture for the plant is obtained, by the breaking the particles of the earth, and at the same time no more of the roots are broken off than can easily be supplied, and the rest remaining in their places, the plant continues growing without that stop or decay, which must hap-

pen on transplanting, and which it recovers only by degrees. It is observed, that some plants are the worse for transplanting: lucerne and saintfoin are never so good after transplanting, as when they are left in their native places, at the same distances; and finochia, removed, is never so good and tender as when it is not. This last plant receives such a check from transplanting in its infancy, that it has afterwards a disease like the rickets, which causes knots and swellings in it, that spoil it as a delicacy. All the tap-rooted plants suffer by transplanting; for it is necessary in this to cut off the long-main root, which afterwards, however good the soil may be, never arrives at the length it otherwise would have had, and which was necessary for the success of the plant. One great benefit of hoeing is, that it keeps plants moist in dry weather, the advantage of which to their growth is easily seen.

The hoe also, particularly the horse-hoe, for the other does not go deep enough, procures moisture for the roots from the dews which fall most in dry weather; and these dews seem to be the most enriching of all moisture, as it contains in it a fine black earth, which will subside from it in standing, and which seems fine enough to be the proper pabulum, or food for plants.

A demonstration that the tilled earth receives an advantage from these dews, which the untilled does not, is this; dig a hole in any piece of land, of such a depth as the plough usually goes to; fill this with powdered earth, and, after a day or two, examine the place, and the bottom part of this earth, and bottom of the hole, will be found moist, while all the rest of the ground, at the same depth, is dry.

Although hard ground, when thoroughly soaked with rain, will continue wet longer than fine tilled land adjoining to it, yet this water serves rather to chill than to nourish the plants standing in it, and to keep out the other benefits of the atmosphere; it leaves the ground much harder also than before, when it is finally exhaled out of it; and when, at length, the earth is then hardened, it can receive no benefit from any thing less than a deluge of rain, which seldom falls till the season of vegetation is over.

As fine hoed ground is not so long soaked with rain, so the dews never suffer it to become perfectly dry. This appears from

from the nourishing state of plants in hoed ground, while others near them, but in ground not hoed, are starved for want of nourishment. The common opinion is against this, but observation proves it to be true against the common opinion. The vulgar are guided by this, however, and will not hoe their ground in dry weather for fear of letting in the drought, as they call it; whereas hoeing this is the only method of keeping away the drought, and without either this, or watering, they must perish in these seasons. *Tull's Horse-Hoeing Husbandry*.

HOG, *Sus*, in zoology, a genus of quadrupeds, of the order of the jumenta.

Besides the common hog, there are several other species: 1. The American hog, with the back bristly behind, and with a naked tail. 2. The musk hog, with a cyst, or gland on the back, in which is secreted a perfumed fluid: its tail is naked. 3. The babyroutta, with two teeth growing on the forehead.

Hog's dung is, by Mortimer, reckoned one of the richest manures we are acquainted with, and the next in value to that of sheep's dung, and is found to be equal in virtue to twice the quantity of any other dung, except this. The ancients seem to have been displeased with it, on account of its breeding weeds; but this is only accusing it of being too rich, for any dung will do this when laid too thick. It is an excellent manure for pasture-grounds, and excels all other kinds of dung for trees. The farmers who use this dung for their lands, generally take care to save it, by well paving the styes, and increase the quantity by throwing in bean-stalks, stubble, and many other things of a like nature; and by good management of this kind many farmers have procured fifty or sixty loads of excellent manure a year, out of a small stye. The very best way of using this dung, is to mix it with horse-dung; and for this reason it is best to have the stye near the stable, that the two cleanings may be mixed in one heap, and used together.

They have in many parts of Staffordshire a poor light, shallow land, on which they sow a kind of white pea: the land is neither able to bear this, nor any thing else, to advantage for their reaping; but when the peas are ripe, they turn in as many hogs as the quantity of peas will fatten, suffering them to live at large, and remain there day and night; in consequence of this, the land will produce good

crops of hay for several years afterwards; or if too poor for that, it will at worst raise grass enough to make it a good pasture-ground.

* HOGARTH, (WILLIAM) an excellent burlesque painter, was born in London, and his father put him apprentice to an engraver of pewter pots; in which humble situation he passed through his time, without seeming to have any higher views. His apprenticeship was however no sooner expired, than he pursued every method of improving himself in the art of drawing, of which his former master had given him but a rude idea. This ambition was productive of distress; and while he spent his time in preparing for his future excellence, he felt all the contempt that indigence could produce. The first piece in which he distinguished himself as painter, was in the figures of the Wandsworth assembly, which are drawn from the life, without any circumstances of his burlesque manner. His next piece was his pool of Bethesda, which he presented to St. Bartholomew's hospital. His being afterwards employed to draw designs for a new edition of Hudibras, was the inlet to his future excellence in the burlesque or humorous pictures, in which he exceeded all that went before him. The first of this kind was his Harlot's Progress, in which he conducts her through all the vicissitudes of wretchedness to a premature death. This was followed by the Rake's Progress, adapted to answer the most moral purposes; as is also his Marriage A-la-mode, in six prints; and the effects of idleness and industry, exemplified in the conduct of two fellow-apprentices, in twelve prints, &c. Mr. Hogarth travelled with several of his companions to Paris; but had no sooner landed at Calais, than attempting to draw the gate of that city, he was taken into custody, on suspicion of his being a spy; but being fully cleared from that charge by his companions, he was instantly set at liberty; however, the resentment he felt on this occasion induced him to design the satirical print called the Gate of Calais, and he never after drew a Frenchman but in caricature. The last circumstance of his life was his contest with Mr. Churchill. It is said that both met at Westminster-hall, Hogarth to take by his eye a ridiculous likeness of that poet, and Churchill to furnish a description of the painter; but Hogarth's print of the poet was not much esteemed, and the poet's letter to him was so exceedingly severe, that it is supposed to

have occasioned his death. Besides the pictures and prints already mentioned, Hogarth published many others, in which are shewn all the force of the most excellent comic genius.

HOGSHEAD, in commerce, a measure of capacity, containing sixty-three gallons.

HOISING, in the sea-language, the act of drawing up any weighty body by the help of a tackle or complication of pulleys.

HOKE-DAY, the Tuesday after Easter-week ; which was the day on which the English conquered and expelled the Danes : this was therefore kept as a day of rejoicing, and a duty, called Hoke-Tuesday-Money, was paid to the landlord, for giving his tenants and bondmen leave to celebrate.

HOLD, in ship-building, all that part of a ship's inside which reaches from end to end, from the lower-deck to the floor or bottom, and contains the cargo, provisions, &c.

HOLD-FAST, a large piece of iron, in the shape of the letter S, fixed into a wall, to strengthen it. Also a tool used by joiners, carvers, &c. which goes through their benches, to hold fast such work as cannot be finished by its being held in the hand.

HOLIBUT, the name of a very large flat-fish, resembling the flounder, but longer in proportion to its breadth.

* **HOLLAND**, one of the United Provinces, bounded on the north and west by the German ocean ; on the east by the Zuider sea, the Overysfel, and Guelderland ; and on the south by Zeeland and Utrecht. It is a hundred miles in length, though not above thirty broad, but it enjoys the greatest foreign trade of any province in the world. This country was formerly covered with thick forests, as still appears by the roots and stumps of trees, which have been found in the road of the island of Texel, seated towards the north part of Holland, which was quite over-run with wood, not above a hundred and sixty years ago.

Holland is divided into North and South. The North, which is called West Friesland, or North Holland, extends from Amsterdam to the North sea ; the South, or Zuid Holland, extends from Zeeland, Brabant, and the territory of Utrecht, as far as the dyke of Sparendam, and comprehends very large lakes, and a part of the sea to the south. In this small

extent, there are twenty-nine walled cities, with several towns that enjoy the privileges of cities, with above four hundred villages. There are six large cities, where the states of the province hold their sessions, namely, Dort, Haerlem, Delft, Leyden, Amsterdam, and Tergow. The principal towns which have the privileges of cities, but are without walls, are the Hague, Gravesand, Delfshaven, Beverwyck, Ryf-wick, Vlaerdinghe, which is the residence of the chief counts of Holland, Schaegen, Nieuport, and Geervliet. Besides these, there are several isles which depend on Holland, as Ens and Urck, in North Holland ; Voorn, Hoeree, Somersdyck, Korendyck, Putten, and Pierchiel, on the south ; and towards the north, Texel, Vlielandt, Schellinck, and Wieringh. The soil of this province is every where soft and marthy, for which reason it is not fit for tillage, and therefore there is little corn, and no wheat. The whole country is meadow-land, which is overflowed in winter, and it would continue so always, if the inhabitants had not found out a method of drawing off the water by engines. It would likewise be always exposed to the inundations of the sea, if they had not raised very strong dykes. The Dutch are gentle, industrious, laborious, given to trade, good seamen, and lovers of liberty. They suffer the public exercise of all sorts of religions, except the Roman Catholic, who perform their ceremonies in private houses, and their priests and other ecclesiastics are not permitted to wear their proper habits. There are few countries where the arts and sciences are more cultivated than in Holland, and it has produced a great number of learned men. The air is cold and unhealthy, especially about the equinoxes, and there is no country where the weather is more unsettled. Though Holland has no corn of its own, yet it supplies the other provinces, and even sometimes France and Spain. The cleanliness of every part of Holland is carried to an excess ; for they make the outside of their houses as clean as the inside. The whole province is cut through with a thousand canals, and the land is covered with green grass or flowers, of which they have many curious sorts, as well as fruits. Though it has no staple commodity or produce of its own, except butter and cheese, yet it is considered as the granary of Europe. It has no vineyards, and yet has more wine, and more sorts of wine, than any other part of the world. It has

H O L

has no woods, and yet there are more joiners and carpenters here than in any other country, and more ships, barks, boats, and vessels, than in any other part of Europe. In short, it is a magazine where the product of every country is lodged, bought in very cheap, and sold out very dear. Their fleet, if not their army, has formerly been a match for any power in Europe.

HOLLAND, in commerce, a fine and close kind of linen, so called from its being first manufactured in Holland. See the article *Linen*.

HOLLOW, in architecture, a concave moulding, about a quarter of a circle, called by some a casement, and by others an abacus.

HOLLOW-SQUARE, in the military art, a body of foot drawn up, and an empty space in the middle for colours, drums, and baggage.

HOLLY, in botany. See *Aquifolium*.

HOLLY Hedges are a very beautiful evergreen and strong fence, but liable to perish in hard winters. It has been supposed, that the severity of the cold, in these seasons, was the occasion of this: but a closer observation has shewn, that the mischief is owing to the field mice, which in very severe seasons, when they can get nothing else, disbark the roots of these shrubs.

The method of preserving these hedges, in such seasons, is found to be by clearing away the weeds which are a harbour to those little animals, and placing traps and boxes in proper places, with a paste made of butter and rats-bane, daubed over their insides, and holes made in their sides no bigger than what the mice or rats, if there be any there, can creep into; and thus the vermin are destroyed, and the mischiefs which might attend rats-bane being exposed, are prevented.

Knee HOLLY, a name given to butcher's broom.

Sea HOLLY, a plant more usually called eryngium.

HOLocaust, a burnt-offering, or sacrifice, wholly consumed by fire; of this kind was the daily sacrifice in the Jewish church. This was done by way of acknowledgment, that the person offering and all that belonged to him, were the effects of the divine bounty. The heathens, who also offered holocausts, probably considered them in the same light: and the disposing of sacrifices this way was the general custom, till Prome-

H O M

theus introduced the custom of burning only a part, and retaining the remainder for his own table.

HOLOGRAPH, in the civil law, an instrument entirely in the hand-writing of the person who signs it.

HOLY-GHOST, one of the persons of the holy Trinity. See *God* and *Trinity*.

Order of the HOLY-GHOST, the principal military order in France, instituted by Henry III. in 1569. It consists of an hundred knights, who are to make proof of their nobility for three descents. The king is the grand-master, or sovereign, and as such, takes an oath on his coronation-day, to maintain the dignity of the order.

The knights wear a golden-cross, hung about their necks by a blue silk ribband, or collar. But before they receive the order of the Holy Ghost, that of St. Michael is conferred as a necessary degree; and for this reason their arms are surrounded with a double collar.

HOLY-THURSDAY, the same with ascension-day.

HOLY-DAYS, the same with festivals.

HOLY-ROOD-DAY, a festival otherwise called the exaltation of the cross.

HOMAGE, in law, is the submission, loyalty, and service which a tenant promised to his lord, when he was first admitted to the land which he held of the lord in fee: also that owing to a king, or to any superior.

HOMAGE-JURY, a jury in a court baron, consisting of tenants that do homage to the lord of the fee.

This jury makes enquiry into, and presents of, defaults and deaths of tenants, and of admittances and surrenders into the lord's court.

* **HOMER**, the most ancient, and the most celebrated of all the Greek poets, lived about a thousand years before the Christian era. Seven cities disputed the glory of having given him birth, viz. Smyrna, Rhodes, Colophon, Salamis, Chios, Argos, and Athens. However, the opinion which appears to have the best foundation, is, that he was born at Smyrna or Chios. We have nothing that is very certain in relation to the particulars of his life: his mother's name it is said was Chritheis, and his mother's Phemius or Pronapides, who taught polite literature and music at Smyrna. Phemius, charmed with the good conduct of his pupil's mother Chritheis, married her, and adopted her son. After their death Homer inherited

herited their substance, and his father's school, when he obtained universal admiration; but a person named Mentès, the master of a ship, who arrived at Smyrna in the way of trade, being much pleased with Homer, proposed his quitting his school, and accompanying him in his voyages. Homer, who had already begun his *Iliad*, embarked with Mentès. It appears certain that he passed through all Greece, Asia Minor, Egypt, and several other countries. In these voyages, he became an excellent geographer, and informed himself of the manners of different nations, and particularly of those of the Greeks, the Phrygians, and Egyptians. In returning from Spain he landed at Ithaca, where he was afflicted with a defluxion in his eyes, when Mentès left him with Mentor, one of the principal inhabitants of Ithaca, and returned to Leucadia, his native country. At his return he found Homer cured, on which they re embarked, and after having visited the coast of Peloponnesus, arrived at Colophon, where, it is said, this great poet lost his sight. This misfortune induced him to return to Smyrna, from whence he went to Cumæ. He was there received with such joy, that he desired to be provided for out of the public treasury; but this request being rejected, he went to Phocæa, uttering this imprecation, "That no poets might ever be born at Cumæ, to celebrate that town by their poems." He afterwards wandered through several places, and stopt at Chios, where he married, and composed his *Odyssey*. Some time after, having added many verses to his poems in praise of the cities of Greece, especially of Athens and Argos, he went to Samos, where he spent the winter. From Samos he went to Ios, one of the Sporades, with a design to continue his voyage to Athens; but falling sick, he died there, about the nine hundred and twentieth year before the Christian æra. We have two of his poems, which are greatly celebrated, the *Iliad* and *Odyssey*, both of which are master-pieces; we there find beauties of all kinds. Nothing was ever comparable to the clearness and majesty of Homer's style; to the sublimity of his thoughts; to the strength and sweetness of his verses. All his images are striking; his descriptions just and exact; the passions so well expressed, and nature so finely painted, that he gives to every thing motion, life, and action. But he more particularly excels in invention, and in the different characters of his heroes, which

are so varied, that they affect us in an inexpressible manner. In a word, the more he is read by a person of good taste, the more he is admired.

HOMESOKEN, a privilege enjoyed by every person, in his own house or home, which ought not to be invaded.

HOMICIDE, in common law, the killing a man.

It is divided into voluntary and casual. Casual is either merely casual, or mixed; the former is when a person kills another by pure mischance, being about his lawful occasions: it is accounted mixed, when there is negligence or some unwarrantable circumstance attending the action. Voluntary homicide, that which is deliberate; and is either with a precedent malice, or without: the former is a felonious killing, with malice prepense, any person in the realm, who is under his majesty's protection.

HOMILY, in ecclesiastical writers, a sermon, or discourse, upon some point of religion, delivered in a plain manner, so as to be easily understood by the common people.

At the time of the Reformation there were several of these homilies made and printed, and ordered to be read in such churches as were not provided with a sufficiently learned minister, in order to prevent unsound doctrine being taught in remote country places.

In the primitive church, homily rather meant a conference or conversation by way of question and answer, which made part of the office of a bishop, till the fifth century, when the learned priests were allowed to preach, catechize, &c. in the same manner as the bishops used to do.

There are still extant several fine homilies, composed by the ancient fathers, particularly St. Chrysostom and St. Gregory.

HOMOGENEOUS, or **HOMOGENEAL**, denotes such subjects as consist of parts of the same nature, in contradistinction to heterogeneous, where the parts are of different natures.

HOMOGENEAL NUMBERS, such as are of the same kind.

HOMOGENEAL SURDS, such as have one common radical sign, as $\sqrt[2]{a}$, $\sqrt[2]{b}$, or $\sqrt[3]{b^3}$, or $\sqrt[3]{a^6}$. See the article *Surds*.

HOMOLOGOUS, in geometry, is applied to the correspondent sides and angles of similar and equiangular figures, which are said to be homologous, or in proportion to one another.

HONE,

HONE, a fine kind of whetstone, used for setting razors, pen-knives, and the like.

HONEY, *Mel*, a sweet vegetable juice, collected by the bee from the flowers of different plants, and deposited in the cells of the combs; from which it is extracted, either by spontaneous percolation through a sieve in a warm place, or by expression. That which runs spontaneously is purer than the expressed; a quantity of the waxy and other impurities being forced out along with it by the pressure, especially when the combs are previously heated. The best sort of honey is of a thick consistence, a whitish colour, an agreeable smell, and very pleasant taste: both the colour and flavour are said to differ in some degree according to the plants which the bees collect it from.

Honey exposed to a gentle heat, as that of a warm bath, becomes thin, and throws up to the surface its waxy impurities, together with the meal or flower sometimes fraudulently mingled with it, which may thus be separated by disputation, so as to leave the honey pure.

This juice is a useful sweet, for medicinal as well as domestic purposes; more aperient and detergent than the simpler sweet prepared from the sugar cane; particularly serviceable for promoting expectation in disorders of the breast, and as an ingredient in cooling and detergent gargarisms. For these, and other similar intentions, it is sometimes mixed with vinegar, in the proportion of about two pounds to a pint, and the mixture boiled down to the consistence of a syrup; sometimes impregnated with the virtues of different vegetables, by boiling in like manner with their juices or infusions, till the watery parts of the juice or infusion have exhaled and left the active matter incorporated with the honey. The boiling of honey, though it dissipates great part of its odorous matter, and thus proves in some cases injurious to it, is in some cases also of advantage: there are particular constitutions, with which honey remarkably disagrees, and in which even very small quantities occasion gripes, purging, and great disorder: by boiling, it loses of that quality by which it produces these effects.

HONEY-COMB, a waxen structure full of cells, framed by the bees to deposit their honey, eggs, &c.

There is something very wonderful in the construction of the cells in the honey-

comb. And if these admirable insects knew their advantage, they could not more nicely observe the rules of the modern geometry. Hence we may observe, that though the method of discovering the maxima and minima of quantities by fluxions is a part of knowledge which the mathematicians have but lately acquired; and which they esteem the sublimity of human science, yet this very thing was imparted to these insects at the first creation of things.

The celerity with which a swarm of bees received into a hive, where they find themselves lodged to their minds, bring their works of the combs to perfection, is amazing. There are vast numbers at work all at once; and that they may not incommode one another, they do not work upon the first comb till it is finished, but when the foundation of that is laid, they go to work upon another, so that there are often the beginnings of three or four stories made at once, and so many swarms allotted to the carrying on the work of each. It would be a desirable thing to see the bees at work, in making these elegant and regular fabrics; but it is scarce possible to see any thing of this kind distinctly, even with the advantage of glass-hives; for, as M. Reaumur observes, no bee ever works singly upon this occasion, but wherever the fabric is erecting, there are numbers together trying to assist each other, and their motions are so swift, and so hid by their standing before one another, that very little is to be seen of them. New bees are every moment going to the place, and old ones going away; and very frequently those which arrive late are dispatched away immediately after they arrive: there are some only very short moments in which the glass of the hives can give a view of the creatures regularly employed at their work; for the moment one sees a bee at work in building, that moment we see either one fly off, or else another get before her, so as to hinder the view: however, it is plain that the bee uses her teeth in modelling and fashioning the wax.

HONEY-COMB, in gunnery, a flaw in the metal of a piece of ordnance, when it is ill-cast and spongy.

HONOUR-POINT, in heraldry, is that next above the center of the escutcheon, dividing the upper part into two equal portions.

HOOD, in falconry, a piece of leather, with which the head of a hawk, falcon, &c. is covered.

HOOF, *Ungula*, the horny substance that covers the feet of divers animals, as oxen, horses, sheep, &c.

A horse's hoof should be of a round, not longish figure; and its substance solid, tough, high, smooth, without any circles, somewhat shining, and of a dark colour; for that which is white is commonly brittle; in short, it ought to be of the colour of the hoof of a deer, and the whole foot round, but a little larger below than above, upright, and somewhat hollow on the inside, and so disposed that he may tread more on the toe than the heel.

Bony **HOOF** is a round bony swelling, growing on the very top of a horse's hoof, which is always caused by some blow or bruise.

The method of cure is, first to digest the swelling, either with rotten litter, or hay boiled in stale urine, or with a plaster of stale wine lees, and wheat flour boiled together, in order to ripen it, and bring it to suppuration, or to dissolve the tumor. If it come to a head, lance it in the lowest part of the softness, with a thin hot iron, to let out the matter; then tent it with turpentine, deer's suet, and wax, equal quantities of which should be boiled together; and laying a plaster of the same salve over it, to keep in the tent till it be thoroughly well.

HOOF-BOUND: this disorder is a shrinking of the hoof at the top and at the heel, which makes the skin flare above the hoof, and grow over it.

This disorder may happen to a horse, either by keeping him too dry in the stable, by straight shoeing, or by some unnatural heat after foundering.

HOOF-BRITTLE, an infirmity in horses, proceeding either naturally, from the fire or dam; or accidentally, from a surfeit falling down into the feet; or from the horse's being formerly foundered.

For the cure, take unwrought wax, turpentine, sheep's suet, and hog's grease, of each four ounces; fallad-oil, a quarter of a pint; and of dog's grease, half a pound: boil them all together, and with this mixture, anoint the hoof well for two or three days, especially at the setting on of the hair, and stop them with cow-dung and dog's grease, melted together.

HOOF-SWELLED, a disorder that sometimes happens by a prick, or a young horse's being over-ridden, or too hard wrought, and which if not speedily removed, will beget a wet spavin.

For the cure, take the strongest aqua-fortis you can get, and first file or draw away the old hoof somewhat near, with a file or drawing iron; then touch what is left of the hoof, three or four dressings or more, with the aqua-fortis; and anoint the foot with an ointment made of one pound of hog's grease; patch-grease, three quarters of a pound; Venice-turpentine, five ounces; new wax, three ounces; and fallad-oil, three ounces; all melted together over the fire; and by anointing the coffin of the foot quite up to the top, you will cause a new hoof to grow upon it.

HOP, *Lupulus*, in natural history, a plant of the reptile kind, whose flower is a principal ingredient in beer and other malt-liquors.

For the cultivation of hops, a rich, deep, mellow, dry soil, more inclining to sand than clay, is in general the best; and in particular, a black garden mould is excellent. Stiff clays, spewy lands, such as are apt to be overflowed by floods, hard gravels, stony grounds, very sandy ones, and such as are not at least a foot and a half deep, are altogether improper for hops.

The best situation for hop-grounds is such as inclines to the south, or lies open to it, so that they may have the benefit of the sun during the greatest part of the day. It must also be open, for the air to have a free passage and circulation between the plants; and it should be so sheltered to the east, north, and west, that neither the frosty winds in the spring may cut off the young sprouts, nor the more stormy ones in summer and autumn destroy the full grown hops.

The ground being prepared for planting, towards the latter end of February, or in the beginning of March, if the soil be light, or late in March if it be strong and moist, make, in the places marked out by the sticks stuck in them, holes about twelve or sixteen inches wide, and of a depth proportioned to the nature of the ground. In general, ten or twelve inches will be a sufficient depth. If the ground be shallow, and you meet with hard clay or gravel, by no means enter into this, for you would then make a basin to retain water; but, in such case,

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instead of going deeper, raise up a small hill of good mould. If there is a good depth of rich mellow mould, dig the hole a foot and a half or two feet deep, and you will find the hops thrive the better ; for their tap-roots naturally run downward.

When all things are ready for planting, fill up the holes with the mould before thrown out of them, if it be naturally good, after having first broke it fine with a spade : but if the same earth be not rich enough, make use of fine fresh mould, or of the compost provided for this purpose. About a peck or two of this will be sufficient for each hill ; but no new dung should be put into the hole on any account.

Then, with a dibble or setting stick, such as gardeners generally use for planting of beans, make five or six holes, the depth of your sets, one in the middle, perpendicular, and the rest round about, sloping, and meeting at the top near the center : put your sets therein, so that they may stand even with the surface of the ground ; and then press the mould close to them, and cover them with fine mould two or three inches thick. A stick should be placed on each side of the hill to secure it.

The ground being thus planted, all that is to be done in the following summer is to keep the hills and alleys clear from weeds by frequent hoeings ; to dig the ground in the month of May, and to carry off all the stones that are turned up by digging ; to raise a small hill about the plants ; to throw some fine mould on their roots ; and in the latter end of May, or beginning of June, to twist all the vines and branches together into a bunch or loose knot, and lay them thus twisted on the top of the hill.

Towards the latter end of February, or in the beginning of March, in the second year, when the weather is kindly, open the hills, and with a sharp knife, cut off the shoots of the first year to within an inch of the old stock, together with all the younger suckers that have sprung from the sets, and cover the stock with fine earth. To keep the knife sharp, you should have a whetstone always by you at dressing.

In the third and following years, when you dig your hop-ground in February, let the earth be taken away with a spade, or hoe, round about the hill, very near them, that you may the more

conveniently come at the stock to cut it : then in fair weather, towards the beginning of March, if your hops be weak, begin to dress them ; but if they are strong, and in heart, the middle or latter end of March will be the best time ; for late dressing restrains their too early springing, which is the cause of many injuries to the hops.

After the hops are dressed the second year, the next business is to pole them. Poles of only ten or twelve feet long will do then ; but in the third year, by which time they come to their full bearing state, they will require poles of full size : this, if the ground be rich, and the hop vigorous, will be from sixteen to twenty feet, or even more ; or there will be danger of losing great part of the crop.

If the hop be weak, and the ground not rich, the poles should not be more than from fourteen to eighteen feet long, for fear of impoverishing the root ; for the hop will soon run itself out of heart if over-poled : so that, as was said before, there is more danger of over-poling than in under-poling : neither can a good crop be expected from an over-poled ground, because the branches which bear the hops grow very little till the buds have overreached the poles, which they cannot do when the pole is too long. Two small poles are sufficient for a hill in a young ground.

Towards the latter end of July hops begin to blossom, about the beginning of August they bell, and in forward years, they are sometimes ripe at the end of August, or beginning of September. When they begin to change colour, or are easily pulled to pieces, when they emit a fragrant smell, and when their seeds begin to look brown and to grow hard, you may conclude that they are ripe : then pick them with all expedition ; for a storm of wind will do them great mischief at this time ; and hops picked green and bright, without bruising or discolouring, will sell for a third part more than those that are otherwise.

In drying of hops, first lay the hair-cloth very even on the bed or floor of the kiln, and spread the green hops thereon, about six inches thick, laying them with a rake as smooth as possible, not thicker in one place than another. Let the kiln be moderately warmed before you lay on the hops ; then keep an even and steady fire under them, but not too fierce at first, for fear of scorching them ; and let

not the fire slacken, but rather increase it till the hops are nearly dried, lest the moisture or sweat, which the fire has raised, fall back and discolour the hops. After the hops have lain thus about seven, eight, or nine hours, have left off sweating, and leap up when beaten with a stick, then turn them upside with a broad malt shovel, or scoop made for that purpose, or cast them up into a heap in the middle, and afterwards spread them equally on all sides. Let them remain in this situation for two or three hours more, till every hop, if possible, be thoroughly and equally dried; and then with a hair-cloth, remove them to the heap where they are to lie till they are bagged.

HOPPER, a kind of basket, wherein the seed-corn is carried at the time of sowing. See *Sowing*.

It is also used for the wooden trough, in a mill, into which the corn is put to be ground.

HORARY, something relating to an hour. Hence

HORARY, or **HOURLY-CIRCLE** of a *Globe*, is a small brazen circle, fixed upon the brazen meridian, divided into twenty-four hours, having an index moveable round the axis of the globe, which upon turning the globe fifteen degrees, will shew what places have the sun an hour before or after us. See *Globe*.

HORARY CIRCLES, or **LINES**, in dialling, are the lines or circles which mark the hours on the sun-dials. See *Dial*.

HORDEOLUM, *Crithe*, or *Barley-Corn*, so called from its resemblance to that grain, in medicine, a tumor that grows in different parts of the eye-lids; it is commonly called a sty. When it is small, it comes only on the edge of the eye-lids, or very near it between the cilia; but when it is larger, it spreads towards the middle of the lid. In their beginning, an inflammation commonly accompanies these tumors: when they do not suppurate, their matter is concreted, and they become wens, which are sometimes soft, and sometimes very hard. Sometimes this disease disappears awhile, and afterwards returns in a few days.

The cure of this disease is suited to the different circumstances that attend it. If there be an inflammation, the pulp of a roasted apple applied by way of poultice soon disperses it, and sometimes only abates the tumor. If it hardens, it must

be opened with a lancet, and the hard flesh consumed by a liquid caustic, and afterwards the plaster of the abbot de Grace applied.

If the hordeolum comes on the lower eye-lid, it is generally more on the inside than the outside, and is cured by the lapis infernalis, or rather by making an incision therein, drawing out the tumor and applying a collyrium of ten parts of water to one part of spirit of wine.

There are other little tumors on the edges of the eye-lids, which by reason of their whiteness and hardness are called chalazæ; as also, another sort called lithiasis or gravel-stone. All which are cured in the same manner. *St. Yves*.

HOREHOUND, *Marubium*. See *Marubium*.

HORIZON, in astronomy, a great circle of the sphere, dividing the world into two hemispheres, the one upper and visible, the other lower and invisible.

The horizon is either rational or sensible.

Rational, True, or Astronomical **HORIZON**, called generally, the horizon, is a great circle whose plane passes through the center of the earth, having the zenith and nadir for the poles thereof. It divides the sphere into two equal parts, or hemispheres.

The meridian and vertical circles all cut the rational horizon at right angles, and into two equal parts.

Sensible, Visible, or Apparent **HORIZON**, is a lesser circle of the sphere; this circle divides the visible part of the sphere from the invisible, and has for its poles the zenith and nadir; consequently the sensible horizon is parallel to the rational; and it is cut at right angles, and into two equal parts, by the verticals.

HORIZONTAL, something relating to the horizon; or that is taken in, or on a level with the horizon: thus we say, an horizontal plane, &c.

HORIZONTAL DIAL, that drawn on a plane parallel to the horizon, having its style elevated according to the altitude of the pole, in the place it is designed for. See the article *Dial*.

HORIZONTAL DISTANCE. See *Distance*.

HORIZONTAL LINE, in perspective, a right line drawn through the principal point parallel to the horizon; or it is the intersection of the horizontal and perspective planes.

HORIZONTAL PARALLAX. See *Parallax*.

HORIZONTAL PLANE, that which is parallel to the horizon of the place, or nothing inclined thereto.

The business of levelling is to find whether two points be in the horizontal plane, or how much the deviation is.

HORIZONTAL PLANE, in perspective, a plane parallel to the horizon passing through the eye, and cutting the perspective plane at right angles.

HORIZONTAL Range, or *Level Range*, of a piece of ordnance, is the line it describes, when directed parallel to the horizon.

Dr. Halley has given us the two following useful theorems :

1. A shot being made on an inclined plane, having the horizontal distance of the object it strikes, with the elevation of the piece, and the angle at the gun between the object and the perpendicular, to find the greatest horizontal range of that piece loaded with the same charge of powder, that is, half the *latus rectum* of all the parabolas made with the same impetus.—Thus half the angle contained between the object and nadir, and the difference of the given angle of elevation from that half; subtract the versed sine of that difference from the versed sine of the angle made by the object and zenith: the difference of those versed sines will be to the sine of the angle last mentioned, as the horizontal distance of the object struck to the greatest range of forty-five degrees.

2. Having the greatest horizontal range of a gun, the horizontal distance and angle of inclination of an object to the perpendicular, to find the two elevations necessary to strike that object.—Take half the angle contained between the object and nadir, this half is equal to half the sum of the two angles of elevation sought; then say, as the horizontal range is to the horizontal distance of the object, so is the sine of the angle of inclination to a fourth proportional; which fourth, being subtracted from the versed sine of the angle formed by the object and zenith, leaves the versed sine of half the difference of the angles of elevation, whose half sum was before obtained; therefore by adding and subtracting half the difference of the angles of elevation to and from the said half sum, the elevations themselves will be found. See more under the article *Projectile*.

HORIZONTAL REFRACTION. See the article *Refraction*.

HORIZONTAL SHELTERS, among gardeners, are defences disposed parallel to the horizon, for tender plants, blossoms, and fruits, in the spring, to defend them against blasts, and pinching nights.

The only sort of shelter Mr. Miller approves of, for fruit trees, is that made with two leaves of slit-deal, joined over each other, and painted; these being fixed upon the top of the wall, with pulleys, to draw up and down at pleasure, form a sort of penthouse, which are let down in great rains, or cold nights, during the time that the trees are in flower, or the fruit is setting. But then, he observes, that these shelters should be removed away soon after the fruit is set, so that the trees may enjoy all the advantages of rain, dew, &c. in the summer, which are absolutely necessary to have healthy trees, or good fruit.

HORN, *Cornu*, in physiology, a hard substance growing on the heads of divers animals, particularly the cloven-footed quadrupeds; and serving them both as weapons of offence and defence.

The casting off the horns of deer is a singular phenomenon, the true reason of which seems to be a stoppage of the circulation; so that being deprived of the nourishing juice, they fall off much in the same manner as the leaves of trees do in autumn. About ten days after the horns are cast, the new ones begin to appear: these at first are soft and hairy, but they afterwards grow hard, and the creature rubs off the hair.

HORN is also a musical instrument of the wind kind, chiefly used in hunting, to animate the hunters and the dogs, and to call the latter together.

The French-horn is bent into a circle, and goes two or three times round, growing gradually bigger and wider towards the end, which in some horns is nine or ten inches over.

HORNS of Insects, the slender oblong bodies projected from the heads of those animals, and otherwise called antennæ, or feelers.

HORN-WORK, in fortification, a sort of out-work, advancing towards the field, to cover a curtain, bastion, or other place suspected to be weak, as also to possess an eminence, &c.

HORNET, *Crabro*, in zoology, a species of apis with a black thorax, and

double black spots on the segments of the body.

HOROSCOPE, in astrology, the point of the heavens rising above the eastern point of the horizon, at any given time, when a prediction is to be made of a future event; as the fortune of a person then born, the success of a design, &c.

Lunar HOROSCOPE, the point from whence the moon proceeds when the sun is in the ascending point of the east.

HORSE, *Equus*, in zoology, a well known quadruped, the characters of which are these: the fore teeth are six in number, the upper ones incurved, and the inferior prominent: the canine teeth are not exerted, and are on each side separated by a space from the teeth: the hoof is undivided, and the teats are two, and placed in the groin.

The horse is one of the noblest quadrupeds we are acquainted with. In strength and natural fierceness, he is inferior to few, and yet easily tamed. The head is long, and large; the eyes large, and prominent; the ears erect, and beautiful; the neck is long and thick, and elegantly decorated with a mane; the body is rounded and beautifully turned; the legs are strong, without being bulky; and the tail is long, and hairy all the way; the hairs being like those of the mane, only longer, thicker, and more beautiful.

In order to have a horse beautiful and finely made, it has been agreed on all hands, that his head should not be too long nor too large, rather lean and fleshy. His ears thin and narrow, and of a becoming length, well set on, pointing inwards. His brow or forehead not too broad and flat. His nose somewhat rising, and of a good turn; his nostrils wide and thin; his muzzle small; his mouth neither deep nor too shallow, with a star or snip down his forehead, or blaze, which is no way unbecoming, unless it be too large and disproportioned.

Horses that are thus marked, have generally one or more of their feet white, which is also very beautiful, and looks lively. His jaws should be thin and sufficiently wide, not approaching too near together, nor too high upwards towards the onset, that he may have sufficient room to carry his head easy, and in a good place. His eyes well formed, sprightly, and of a middle size. His neck should be arched towards the middle, arising by a beautiful gradation out of his breast and shoulder, the muscles thereof distinct, but

no where overcharged with flesh, growing smaller and thinner, as it approaches towards his head. His shoulders should be thin from the withers, with a gradual enlargement downwards, that his bosom or breast be not too narrow, nor too gross. His fore-legs straight and well placed; his joints lean and bony; his knees not bending, and his pasterns not too long; his feet round and smooth, and his sinews firm and well braced; his carcass rather round than flat; his back not too low, and for strength and durability pretty even and straight. His ribs rather home than open, as they approach towards his haunches; his buttocks round, and the muscles not too fleshy but distinct; his hocks or gambrels neither standing too wide, nor too near together; his hocks should be lean, and no ways puffed or fleshy; his pasterns short, his legs flat and thin, and his tail set on in a good place, rather high than low, rising upon every motion of his body.

The more these properties concur in any horse, the more beautiful he must be, especially when they correspond and agree in due proportion, one to another; and the more a horse is wanting in these, the more plain and ordinary he will appear.

A Description of a HORSE-Mill.—Plate XXIII. *fig. 1.* exhibits the draught of a horse-mill, composed of the great wheel A, which is supposed to contain one hundred and twelve cogs, which catch in the trundle-head B of seven wallowers. According to this disposition, a horse harnessed at the bar C, making one turn, the mill-stone will make sixteen.

In order to shew the best manner of building a mill, we must be determined by reason and experience concerning the proportion of its several parts.

The first point is to make the machine as simple as possible; yet it seems necessary to make a wheel and trundle-head, to give the mill-stone sufficient velocity to turn round its axis forty times in a minute. The resistance to be overcome must therefore be in proportion to the main strength of a horse, which is equal to one hundred and eighty pounds weight, at the end of a lever twelve feet long, when it acts in a horizontal direction, and the horse goes about two thousand fathoms an hour.

Let the radius of the wheel be eight feet, and one hundred and twelve cogs in the periphery, which catching in a trundle-head of seven wallowers, the mill-stone

stone will make sixteen turns for one of the wheel; and as the same proportion ought to be between the number of cogs and that of the wallowers, as of the radius of the wheel to that of the trundle-head, the radius of the trundle-head ought to be six inches.

As to the arm of the lever, at which the horse is to be harnessed, if it be too long, the horse, having a large circumference to describe, will make fewer turns in a minute, and the mill-horse must be larger: it would therefore be proper to fix it at twelve feet, which is most convenient, in which case the horse at every turn will describe a circumference of twelve fathoms four-sevenths; and as he can perform two thousand of these in an hour, he will perform one hundred and sixty turns in the same time, which being multiplied by sixteen, is equal to two thousand five hundred and sixty, the number of turns which the mill-stone makes in an hour at the rate of forty-two per minute.

HORSE-SHOE-HEAD, a disease in infants, in which the sutures of the skull lie too open.

This is commonly a sign of a weak constitution, and a short life. The nurses usually embrocate the parts affected with brandy or rum, to which some add the white of an egg, or palm oil.

HORSE, in a military sense, the same with cavalry.

The light horse, in an army, are all the regiments of horse, except the guards.

HORTICULTURE, the same with gardening. See *Garden* and *Gardening*.

HORTUS SICCUS, a **DRY-GARDEN**, an appellation given to a collection of specimens of plants carefully dried and preserved.

HOSANNA, in the Hebrew ceremonies, a prayer which they rehearsed on the several days of their feast of tabernacles. The word is Hebrew, and literally signifies, *save us now*, or, *save us we pray*.

HOSEA, a canonical book of the Old Testament, so called from the prophet of that name, its author, who was the son of Beri, and the first of the lesser prophets. He lived in the kingdom of Samaria, and delivered his prophecies under the reign of Jeroboam II. and his successors, kings of Israel, and under the reigns of Uzziah, Jotham, Ahaz, and Hezekiah, kings of Judah. His prin-

pal design is to publish the gross idolatries of the people of Israel and Judah, to denounce the divine vengeance against them, and to foretel the captivity in Assyria.

HOSPITAL, a place or building properly endowed, or otherwise supported by charitable contributions, for the reception and support of the poor, aged, infirm, sick, or helpless.

Camp-HOSPITALS are either general or regimental.

The general hospitals are of two kinds, viz. the flying hospital, attending the camp at some convenient distance; and the stationary hospital, which is fixed at one place. In the choice of both Dr. Pringle thinks it better to have them in towns than villages, as the former will afford larger wards, besides more of other conveniences. These wards should be as airy as possible. Regimental hospitals are of the greatest importance, and therefore should be supplied with blankets and medicines from the public stores, with an allowance also for nurses and other necessaries. Barns, stables, granaries, and other out-houses, but above all churches, make the best hospitals from the beginning of June to October.

HOSPITAL-FEVER, a name given to the malignant catarrhal fever, as being frequent in hospitals. See *Malignant-Fever*.

HOSPITALLERS, an order of religious knights now known by the title of knights of Malta. See the article *Malta*.

HOSPODOR, a title borne by the princes of Walachia and Moldavia, who receive the investiture of their principalities from the grand seignior. He gives them a vest and standard: they are under his protection, and obliged to serve him, and he even sometimes deposes them; but in other respects they are absolute sovereigns within their own dominions.

HOST, *Hospes*, denotes either a person who entertains another, or the person so entertained; but it is now generally used in the first of these senses.

HOST, or **HOAST**, *Hostia*, in the church of Rome, a name given to the elements used in the eucharist, or rather to the consecrated wafer; which they pretend to offer up every day, a new host or sacrifice, for the sins of mankind.

HOSTAGE, a person given up to an enemy as a security for the performances of the articles of a treaty.

HOSTILITY denotes a state of war or enmity between two nations.

During a truce all acts of hostility are to cease on both sides.

HOT-BEDS, in gardening, beds of earth enriched with manure, in order to forward vegetation, when the season or climate is not warm enough for the purpose.

By means of hot-beds skilfully managed, the seeds of plants brought from any country between the tropics may be made to flourish even under the poles.

Heat and humidity being the great instruments of vegetation, to promote the growth of any plants, these must be duly proportioned, so as neither to exceed nor come short of the bounds nature has allotted for it.

The usual way of making hot-beds, is of horse-litter and grafs mixed together, and left on a heap for eight or ten days to putrefy; and then removed into a bed, and covered up with glasses.

In Holland they use hot-beds made of sand, and likewise of tanner's bark, which, when once rightly prepared, will maintain an equable heat for six months.

Bradley proposes very justly a thermometer to be used to regulate the heat of the hot-beds. Thus a hot-bed for cucumbers must be kept so hot as to raise the spirit in a glass to the same height as the natural temperature of the weather will raise it to about the end of May and June, when cucumbers will grow without artificial heat or shelter.

HOT-HOUSE, in salt-making, the place where they dry the salt, when taken out of the boiling pan: it is situated near the furnace, which, by means of funnels or tubes, conveys the heat into it.

HOUND, a hunting dog, of which there are several sorts, as the grey-hound, gave-hound, and the blood-hound.

HOURLY, *Hora*, a measure of time, some part of a natural day, usually a twenty-fourth and twelfth, &c. With us it is equal to the twenty-fourth part of the earth's diurnal rotation. Each hour is divided into sixty minutes, and each minute into sixty seconds, &c. Fifteen degrees of the equator answer to an hour.

The ancient Hebrews did not divide the day into hours, but into four parts, as morning, high-day or noon, midnight, and morning-watch. In the New Testament we find the day divided into twelve hours; but though they were equal to each other, yet they were unequal with

respect to the different seasons: thus the twelve hours of the longest day in summer were made longer than those of the shortest day in winter. Herodotus says, that the Greeks learned from the Egyptians the method of dividing the day into twelve parts; the rise of which custom among the latter was, because their priests were wont, twelve times a day, to cry aloud with a howling noise to their cynocephalus; and Cicero and Maurus Victorinus have taken notice of such a ceremony to Serapis.

Censorinus observes, that the word hour was not known among the Romans three hundred years after the building of the city, as there is no mention made of it in the twelve tables, as is done in the other laws after that time; before which, the divisions were only before and after noon. The division of the day and night into twenty-four hours was not known among them before the first Punic war.

The Turks not having any clocks, their priests, stopping their ears with their fingers, proclaim with a very loud voice from the top of their mosques, the cock-crow, break of day, noon-tide, three o'clock, and the twilight. The same custom we find prevailed among the Romans, as appears from Martial;

Horas quinque, puer, nondum tibi nunciat.

The astronomers of Cathaya, &c. still retain, according to bishop Beveridge, the division of the day into twelve parts, and give the name of some animal to each hour.

Hours are divided into equal and unequal; equal hours are the twenty-fourth part of a day and night precisely, that is, the time wherein 15 degrees of the equator mount above the horizon; they are also called equinoctial hours, as being measured on the equinoctial; and astronomical, because used by astronomers, and reckoned from noon in a continued series of twenty-four.

HOUSE, *Domus*, a habitation, or place built with conveniences for dwelling in: thus we say, a town-house, country-house, &c.

HOUSE-BOTE, in law, an allowance of timber out of the lord's woods, for the repairs of a house: this is otherwise called estovers.

HOUSE, in astrology, denotes the twelfth part of the heavens.

HOUSE-BREAKING, or **ROBBING**, is the breaking into and robbing a house

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in the day-time, the same crime being termed burglary, when done by night; both are felony, without benefit of clergy.

HOUSE-LEEK, *sedum*, in botany. See the article *Sedum*.

HOWKER, in the Dutch marine, a vessel with two masts, used in the coasting trade.

HUCKSTER, a person who sells provisions, or small ware by retail.

HUE AND CRY, in law, the pursuit of a person who has committed felony on the high-way.

If the party robbed, or any in the company of a person either robbed or murdered, go to the constable of the next town, and require him to raise hue and cry, and to pursue the offender, describing him, and giving an account, as near as he can, of the course he steered; the constable is immediately to call upon the parish for aid in seeking after the felon, and if he cannot be found within the bounds of that parish, then he is to give the next constable warning, and he the next, till the offender be apprehended, or at least pursued to the sea-side. If persons are not ready at the summons of the sheriff, and cry of the county, to engage in the pursuit, they may be fined: and in case the inhabitants of any hundred, after hue and cry is made, neglect to pursue the same, they shall be liable to pay one half of the damages recoverable against the hundred in which the robbery was committed.

HUGUENOTS, a name given by way of contempt to the Calvinists of France.

The name had its rise in the year 1560; but authors are not agreed as to its origin. The most plausible opinion, however, is that of Pasquier, who observes, that at Tours, the place where they were first thus denominated, the people had a notion, that an apparition or hobgoblin, called king Hugon, strolled about the streets in the night-time; from whence, as those of the reformed religion met chiefly in the night to pray, &c. they called them Huguenots; that is, the disciples of king Hugon.

HULK, in the marine, an old ship of war properly fitted with a very high mast, firmly supported by various props and shrouds, to hoist in and out the masts of other men of war occasionally; also an old ship of any kind.

HULL, in ship-building, the hull or

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lower-frame of a ship exclusive of the superstructure, viz. the mast, sails, and rigging.

HULL-TO, the situation of a ship lying to at sea, without any sail set.

HUMAN, in general, an appellation given to whatever relates to mankind: thus we say, the human soul, human body, human laws, &c.

HUMANITY, the peculiar nature of man, whereby he is distinguished from all other beings.

HUMBLE-BEE, the English name of several species of apes, distinguished by their colours, black, tawny, reddish, &c.

HUMECTATION, in pharmacy, the moistening or preparing medicines by steeping them in water; either to soften and relax their solid parts, or to prevent the evaporation of their more subtle contents.

HUMERUS, in anatomy, the upper part of the arm between the scapula and elbow.

HUMIDITY, that quality in bodies whereby they are capable of wetting other bodies. This differs very much from fluidity, and seems to be merely a relative thing depending upon the congruity of the component particles of the liquor to the pores of such particular bodies, as it is capable of adhering to, penetrating a little into or wetting.

HUMMING BIRD, *Trochilus*, in ornithology, a genus of birds, of the order of passerines, remarkable for being the smallest of all known birds. Of this singular genus, there are several elegant species.

HUMORISTS, *Gli Humoristi*, a celebrated academy of learned men at Rome, first established by Paul Mancini. The device of this academy is a cloud; which being raised of vapours from the salt water of the sea, returns again fresh, with this hemistich from Lucretius, *Redit agmine dulci*.

HUMOROSI, the name of another academy at Cortona in Italy, which must not be confounded with that of the Humorists.

HUMOUR, *Humor*, in a general sense, denotes much the same with liquid or fluid.

HUMOURS of the Eye, are the crystalline, vitreous, and aqueous. See the articles *Eye*, *Crystalline*, &c.

HUMOUR is also used for the peculiar temper of a person, arising from the constitution and prevalence of this or that humour.

HUMOUR,

HUMOUR, in dramatic poetry, is esteemed a subordinate species of what is more usually called manners. See *Manners*.

Every passion wears two different faces; one serious and solemn, fit only for tragedy; and the other merry and ridiculous, called humour, and proper for comedy. The English poets have excelled those of all other nations in this particular; and, indeed, ours is the only language that has a name for it.

HUMULUS, the hop, in botany. See *Hop*.

HUNDRED, *Centum*; *Cent*, is ten times ten, or the square of ten. It makes the third place from the right to the left in the table of numeration.

The proportion of the profits in commerce is reckoned by the hundred, or so much per cent.

HUNDRED, a certain division or part of a shire or county.

* **HUNGARY**, kingdom of, is bounded on the north by Poland and Russia, on the west by Austria, Moravia, and Stiria, on the south by Servia and Bosnia, and on the east by Transylvania. Its principal rivers are, the Danube, which runs across all this country, and divides it into two equal parts; the Dreve, the Save, the Teisse, the Marish, the Raab, the Vag, the Gran, and the Sarvihze. Hungary is a rich plentiful country, producing more corn than they have granaries to put it in, and therefore they are obliged to leave it in the fields in stacks. The black cattle are so numerous, that they send eighty thousand every year to Vienna only. The horses are so common, that they run in the woods like wild beasts, which any one may take and break. There is a great deal of game of all sorts, insomuch that the partridges and pheasants only are more than the inhabitants can consume, and therefore they carry great numbers of them in carts to Vienna. Besides these, they have vast quantities of fish in the rivers, and the Teisse produces such plenty of carps, that you may often buy a thousand for a single pistole; and when the rivers have overflowed their banks, they leave so many fish on the land, that they drive their hogs to devour them, lest the air should be infected. The fruit-trees which are cultivated elsewhere, here grow altogether wild, in prodigious numbers. The fruits are, apples, pears, cherries, quinces, walnuts, chestnuts, peaches, apricots, melons, and several other sorts.

Every one knows how much the wine of Hungary is esteemed, particularly Tokay, which is thought to be the most exquisite in the world, and the very worst here is better than the best in other countries. Besides, there are here a great number of rich mines, which are very profitable. And yet with all these rarities and benefits, the air is very unwholesome, and often fatal to strangers, producing the worst kind of fevers, which approach very near to the plague. The inhabitants have a great many good qualities, and are of a good complexion, but they are a little addicted to idleness. They are naturally fond of liberty, but are under a government which curbs them exceedingly.

HUNGARY-WATER, a distilled water, so denominated from a queen of Hungary, for whose use it was first prepared.

For making it, take of fresh tops of rosemary, one pound and a half; proof spirit, one gallon; and distil in balneo till five pints are obtained.

HUNGER, an uneasy sensation, which creates an appetite or desire of food.

HUNGRY EVIL, among farriers, an excessive desire in horses to eat, which sometimes proceeds from catching cold, or from travelling long in frost and snow, or through barren places.

For the cure, nothing is better than to feed him moderately several times a day with good bean-bread well baked, or with oats well dried and sifted.

HUNTING, the exercise or diversion of pursuing four-footed beasts of game. See the article *Game*.

* **HUNTINGDON**, the county town of Huntingdonshire. It is seated on the north side of the river Ouse, and is very populous. It was made a free borough by king John, consisting of a mayor, twelve aldermen, burgesses, &c. by whom the two members of parliament are chosen. It had anciently fifteen parishes, and has now but two, in one of which, called St. John's, Oliver Cromwell was born, in 1599. Here was formerly a castle, built by William the Conqueror, which afterwards belonged to David, a prince of Scotland, with the title of earl; but Henry VIII. gave it to George Hastings, with the earldom annexed, in whose family it still continues. It stands in the great north road, and has a bridge built of free-stone over the Ouse, which is made navigable for small vessels as high as Bedford. It is the place where the assizes are kept,

kept, and where the county jail stands. It is fifty-eight miles north of London. Long. 0. 25. W. Lat. 52. 23. N.

* **HUNTINGDONSHIRE**, a county of England, bounded on the south by Bedfordshire, on the west by Northamptonshire, as also on the north, and by Cambridgeshire on the east. It is a good corn country, and abounds in pastures. The rest is diversified by rising hills and shady groves, and the river Ouse waters the southern part.

The air of this county is in most parts pleasant and wholesome, except among the fens and meres, though they are not so bad as the hundreds of Kent and Essex. The soil is fruitful, and produces great crops of corn; and the hilly parts afford a fit pasture for sheep. They have great numbers of cattle, plenty of water fowl, fish, and turf for firing, which is of great advantage to the inhabitants, there being but little wood, though the whole county was a forest in Henry the Second's time. The only river besides the Ouse is the Nen, which runs through Whittlesey mere.

HUOY, a vessel used to load and unload large ships, either in the king's or merchant's service; also a small Dutch ship with a main-mast and mizen-mast.

HURA, the sand box-tree, in botany.

HURDLES, in fortification, twigs of willows or osiers interwoven close together, sustained by long stakes, and usually laden with earth. They serve to render batteries firm, or to consolidate the passage over muddy ditches; or to cover traverses and lodgments, for the defence of the workmen against the fire-works, or the stones that may be thrown against them.

HURDLES, in husbandry, certain frames, made either of split timber, or of hazel-rods, wattled together, to serve for gates in inclosures, or to make sheep-folds, &c.

HURDS, or **HORDS**, of *Flax*, or *Hemp*, the coarser parts separated in the dressings, from the tear or fine stuff.

HURLE-BONE, in a horse, a bone near the middle of the buttock, very apt to go out of its sockets with a hurt or strain.

HURRICANE, a furious storm of wind, owing to a contrariety of winds. See the articles *Wind* and *Whirlwind*.

HUSBAND, *Maritus*, a man joined or contracted with a woman in marriage.

HUSBANDRY, the business or employment of a farmer, or person who cultivates land, &c. See *Agriculture*.

Husbandry is divided into two kinds, and distinguished by the epithets old and new. The former is that which has been practised in all countries from the most early times; and the latter that introduced by the ingenious Mr. Tull, and often called the horse-hoeing husbandry.

The great advantage of having land in fine tilth before it is sowed, is universally acknowledged: but we must not stop at those first preparations. Plants require a continuation of culture while they grow, and must not be forsaken till they have attained their full maturity.

Those who are against the frequent ploughings used in the new husbandry, are afraid of drying the earth too much; because, say they, the moisture escapes more easily from a well-loosened soil, than from a hard and close earth.

In answer to this it will appear, from many of the following experiments, that, even in the driest weather, land cultivated according to the new method, continues constantly moister than that which is managed in the old way. Instead of a stagnant wet, more hurtful, perhaps, than beneficial, to plants; earth made fine to a good depth, is prepared, as the reverend Dr. Elliot expresses it, "with open mouth, to drink and retain the dew, which, when it falls upon the land that is untilled, or but poorly tilled, does not sink far, but is carried off by the next sun's heat." That dew is one of the greatest fertilizers of the earth, has been repeatedly proved; and that it will penetrate so deep in a fine loose soil, as to keep that moist, while the ground around it is parched up, appears, among many demonstrations, from Mr. Evelyn's experiment of digging a hole, and filling it up with its former mould well pulverized: or, as Mr. Tull observes, till a field in lands; make one land very fine by frequent deep ploughings, and let another be rough, by insufficient tillage, alternately: then plow the whole field cross-wise in the driest weather, which has continued long, and you will perceive, by the colour of the earth, that every fine land will be turned up moist, but every rough land will be dry as powder, from top to bottom.

The stirring of the earth about the plants whilst they grow, is productive of such excellent effects, that, in some parts of Berkshire, and in many places in

France, they hand-hoe their corn, particularly wheat, and find that the crops amply repay all the charge and trouble of this expensive operation; which, however, cannot be performed but in well-peopled countries. Every husbandman will immediately see, how much a hoe-plough is preferable for this work, and that, to use it rightly, the corn must necessarily be planted in regular rows, as it is in the new husbandry.

Our reason tells us, that the longest lived plants stand most in need of this culture. Perennials require it more than annuals, and wheat which is sown in autumn, and does not ripen till nine months after, wants it more than spring-corn, which occupies the ground only for a few months. The former has to conquer a soil rendered hard, during the course of the winter; but the other has not that difficulty to surmount, though both of them, and, indeed, all sorts of plants, are greatly invigorated by the repeated laying of fine fresh earth to their roots. Every one knows the vast efficacy of wood land, before its native strength and vigour are exhausted; and such, in some degree, is that which this tillage furnishes, besides being constantly attended with the advantage of destroying weeds. How far this last important part of agriculture was well executed by the sarching, or sarrifon, as Mr. Tull calls it, of the ancients, I shall not pretend to say, because we have no clear account of the manner in which it was performed; but it does not seem to have been in any way equal to the horse-hoeing husbandry, which likewise, among its many other excellencies, keeps the land from going out of tilth.

We shall add here Mr. Duhamel's observations on the use of dung, as given by that gentleman in his *Elements of Agriculture*.

"It is often, says he, more advantageous to increase the fertility of land by ploughing, than by dung: 1. Because, in general, only a certain quantity of dung can be had, the product of twenty acres being scarcely sufficient to produce enough for four or five; whereas the particles of the earth may be divided and subdivided almost to infinity. The help derived from dung is therefore limited; whilst no bounds can be set to the benefits that may accrue from ploughing.

"2. Few plants raised in dung ever have the fine flavour of those which grow

in a good soil moderately dunged. Our kitchen gardens and our other grounds afford daily instances of this truth. Pulse, pot-herbs, and fruit, are seldom so good in the neighbourhood of great cities, where dung abounds, as in country gardens, where but little of it is used. The corn raised in those excessively dunged lands, yields a great deal of bran, and not much fine flour, and is difficult to keep. Nice horses will not eat oats of the growth of fields manured with human ordure. But nothing is so striking as the difference between the wine of an undunged vineyard, and that of vines which have been greatly dunged.

"3. Well ploughed land is not exhausted by weeds, and admits the moisture of rains and dews, together with the rays of the sun, all of which contribute greatly to render it fertile, as has been proved by very many experiments.

"4. Dung attracts insects, and those insects gnaw plants. I must add, that most sorts of dung contain a great many seeds, which fill the land with weeds.

"5. It is true, that dung is equally serviceable to light lands, and to strong; but the same may be said of ploughing.

"But, let the benefits arising from dung be ever so great, let the means of obtaining enough of it be ever so easy, and let even its defects be corrected as much as can be, still it will not be the less true, that frequent ploughing is of infinite service to land.

"The farmer must not think of practising the new husbandry in land which cannot be brought to a fine tilth: for as no remedies are proper for all diseases, so no one culture can suit every kind of soil.

"I have met with very zealous husbandmen, who have been in a great hurry to procure all the instruments proper for the horse-hoeing husbandry, before they had examined whether their ground was fit for using them. In walking over the fields, I have found them in so bad order, as to be full of clods, stones, and all sorts of weeds: only the bare surface of the land had been scratched, by what they call ploughing; and indeed their common instruments of tillage were so imperfect, that it was hardly possible for them to do more. I advised them to destroy those weeds by good and frequent ploughing, to procure good instruments, to loosen the ground to a proper depth, to collect good manures, to drain their land well by trenches

trenches and ditches, and, in short, to practise the old husbandry completely, before they attempted the new; for in fact, all the requisites in the former must be the foundation of the latter.

“To answer the ends of this husbandry, the seeds must be distributed so sparingly, that each plant may have room to extend its roots in such a manner that they may be able to collect an abundant quantity of food; each plant must be enabled to tiller greatly, so as to produce a considerable number of stalks; and each stalk must be enabled to bear a fine long ear, well filled with grains to its very point.

“To affect the first of these qualities, the field, after being thoroughly ploughed and well harrowed, must be divided by furrows, the spaces between which may be of such breadth as shall be judged most proper; for neither their precise width, nor the distance between the rows of corn, is yet fully determined. In the middle of these spaces, which will be distinguished by the name of beds, the wheat, or other grains, is to be sown in one, two, or more rows. An inch will be sufficient for the distance between the grains, length-wise of the row; though that may be somewhat less, if the ground be not very good for wheat: or, on the contrary, somewhat more if it be excellent for that grain. By this distribution, each plant will find, in the intermediate spaces between the beds, and in the beds themselves, a sufficient extent of earth wherein to collect its necessary food: for those intermediate species, which I shall call alleys, must be wide enough to admit of stirring the ground in them while the plants grow: but, to answer the second and third intentions, it is of consequence that these stirrings be performed at proper seasons, because each of them is to produce its particular effect.

“These repeated hoeings of the earth will certainly be rewarded with a very plentiful crop, unless the seasons prove extremely bad.

“We will now suppose that the crop is reaped, and that the same field is to be sown again with wheat the next year, and every year after, as it may be; because the rows of corn are placed each time in the middle of the former alleys, which have been ploughed during the whole year without producing any thing. Thus, the only difference between this new method and the old husbandry is, that instead of resting, or fallowing a whole field, whilst another whole field is under corn, and each

of them is separate from the other, the fallow here is in the same field as the corn; being interposed by means of alleys which are the part rested, between the beds, which are the parts cultivated: but there is this great advantage here, that the stirring of the earth in the alleys, which are not planted, not only prepares the soil admirably for being sown the next year, but invigorates the plants actually growing in the beds.

“If it be thought proper to dung the alleys, in order to prepare them for the reception of the seed, the dung, which should be thoroughly rotten, must be laid in the bottom of the deep furrow before made in the middle of them, and there covered with the earth which was thrown up towards the rows of wheat. If the land does not want dunging, this deep furrow is filled up without it; and this should be done immediately after harvest; that there may be time to give the ground another stirring, which need only be a slight one, before the sowing of the rows, which are now to be in the middle of the former alleys; and the alleys of this year will be in the place of the last year's stubble.

“Though land, cultivated according to the principles of the new husbandry, does not require so much dunging as that which is managed in the old way, yet this manure will always help to enrich the soil, especially if it be used in the manner here directed. By being thoroughly rotten when it is laid in the furrow, and then covered over immediately after harvest, it will have time to mellow and diffuse its influence, and not be apt afterwards to choak up the shares of the drill: an inconvenience which does not happen with pigeon's dung, which therefore need not be strewed till the ground is ploughed for sowing.”

It is farther observed:

“1. That if dung be used for the second year's crop, very little of it will suffice; because it need only be laid in the bottom of the furrows.

“2. That there can be hardly any occasion for dung this second year, because, if the earth of the beds in which the wheat grew was good, that of the alleys, or the same soil, must be still better, by reason of its having been fallowed and well tilled.

“3. That the second year's wheat is placed in a most advantageous situation, its roots having a depth of twelve or fifteen inches to extend themselves in, by means

of the furrow which was in the middle of the alley. For this reason, corn ought to thrive best in those lands which have been longest cultivated according to the new husbandry.

"The earth in the alleys is to be horse-hoed during the second year, in the same manner, and at the same seasons, as in the first.

"This frequency of hoeing ought not to be objected to; for the labour of the first hoeing, to make the furrows on each side of the rows, and lay the earth up in the middle of the alleys, cannot be great; and the second only returns that earth into those furrows; the third is only to stir the surface of the soil; the fourth and last is to make the deep furrow in the middle of the alleys, and bank up the rows of corn on each side, with the earth taken out of it: so that neither of these operations ever extends to above a third part of the ground, at any one time.

"The whole field might indeed be ploughed up after harvest: but I would advise the husbandman not to touch the stubble then, because the rows of that will help him to guide the drill in strait lines, and the yet un-rotten straw might be apt to clog the shares of the drill, so as to prevent their working properly. However, if the stubble be very short, this caution becomes the less material, and the whole field may then be ploughed: though still it will be necessary to plough it again in October, in order to make drains to carry off the wet.

"It is almost needless to observe, that all the operations, of which I have been speaking, must often be performed either a little earlier, or somewhat later, according as the year is more or less forward: and that it will always be necessary to wait till the ground is dry enough to be ploughed without danger of its clodding; a circumstance which varies greatly, according to the nature of the soil." *Mills's Husbandry.*

The editors of the last edition of Mr. Tull's Horse-Hoeing Husbandry give, in their preface to that work, the following comparative calculation of the expence and profit of the old method of culture and the new, drawn up by a gentleman who has practised both for some years, and who has no attachment to the new husbandry, farther than he has found it answer in his trials. They candidly appeal to experience, "whether every article in this calculation is not estimated in favour of the common

husbandry; whether the expence be not rated lower than most farmers find it; and whether the crop be not such as they would rejoice to see, but seldom do.

"In the new husbandry, every article is put at its full value, and the crop of each year is computed four bushels short of the other; though, in several years experience, it has equalled, and generally exceeded, those of the neighbourhood in the old way."

An Estimate of the Expence and Profit of Ten Acres of Land, in Twenty Years.

I. In the Old Way.

First year for wheat	l.	s.	d.
33l. 5s. viz.			
First ploughing, at 6s.			
per acre	3	0	0
Second and third ditto,			
at 8s. per acre	4	0	0
Manure, 30s. per acre	15	0	0
		22	0

Two harrowings and			
sowings, at 2s. 6d.			
per acre	1	5	0
Seed, three bushels per			
acre, at 4s. per bush.	6	0	0
Weeding, at 2s. per			
acre	1	0	0
Reaping, binding, and			
carrying in, at 6s.			
per acre	3	0	0
		11	5
		33	5

Second year for barley			
costs 11l. 6s. 8d.			
Once ploughing, at 6s.			
per acre	3	0	0
Harrowing and sowing,			
at 1s. 6d. per acre	0	15	0
Seed, four bushels per			
acre, at 2s. per bushel	4	0	0
Weeding, at 1s. p. acre	0	10	0
Cutting, raking, and			
carrying, at 3s. 2d.			
per acre	1	11	8
Grass-seeds, at 3s. per			
acre	1	10	0
		11	6
		44	11

Third and fourth year's lying in			
grass cost nothing.			
So that the expence of ten acres			
in four years comes to 44l. 11s.			
8d. and in twenty years to	222	18	4

First

H U S

First year's produce is half a load of wheat per acre, at 7l. per acre	1. s. d.
	35 0 0
Second year's produce is two quarters of barley per acre, at 1l. per acre	20 0 0
Third and fourth year's grafs is valued at 1l. 10s. per acre	15 0 0
So that the produce of ten acres in four years is	70 0 0
And in twenty years it will be	350 0 0
Deduct the expence	222 18 4

And there remains clear profit on ten acres in twenty years by the old way 127 1 8

In the New Way.

First year's extraordinary expence is,	
For ploughing and manuring the land the same as in the old way	22 0 0
Ploughing once more, at 4s. per acre	1. s. d. 2 0 0
Seed, nine gallons per acre, at 4s. per bush.	2 5 0
Drilling, at 7d. p. acre	0 5 10
Hand-hoeing and weeding, at 2s. 6d. per acre	1 5 0
Horse-hoeing six times, at 10s. per acre	5 0 0
Reaping, binding, and carrying in, at 6s. per acre.	3 0 0

The standing annual charge on ten acres is 13 15 10
Therefore the expence on ten acres in twenty years is 275 16 8

Add the extraordinaries of the first year, and the sum is 297 16 8

The yearly produce is at least two quarters of wheat per acre, at 1s. 8d. per quarter, which on ten acres in twenty years amounts to 560 0 0

Therefore, all things paid, there remains clear profit on ten acres in twenty years, by the new way 262 3 4

"So that the profit on ten acres of land in twenty years, in the new way, exceeds that in the old by one hundred and thirty-five pounds one shilling and eight-pence, and consequently is considerably more than double thereof; an ample encouragement to practise a method whereby so great advantage will arise from so small a quan-

H Y A

tity of land, in the compass of twenty-one years lease; one year being allowed, both in the old and new way of preparing the ground.

"It ought withal to be observed, that Mr. Tull's husbandry requires no manure at all, though we have here, to prevent objections, allowed the charge thereof for the first year; and moreover, that though the crop of wheat from the drill-plough is here put only at two quarters on an acre, yet Mr. Tull himself, by actual experiment and measure, found the produce of his drilled wheat crop amount to almost four quarters on an acre: and, as he has delivered this fact upon his own knowledge, so there is no reason to doubt of his veracity, which has never yet been called in question. But that we might not be supposed to have any prejudice in favour of his scheme, we have chosen to take the calculations of others rather than his, having no other view in what we have said, than to promote the cause of truth, and the public welfare."

HUSC, the same with what botanists call the calyx, or cup of a flower.

HUSSARS, a kind of irregular cavalry, armed with the sabre and bayonet, are retained in the service of most princes on the continent.

HUSSITES, the disciples of John Huss, a Bohemian, and curate of the chapel of Bethlehem at Prague; who, about the year 1414, embraced and defended the opinion of Wickliff of England, for which he was cited before the council of Constance, and refusing to renounce his supposed errors, he was condemned to be burnt alive, which sentence was accordingly executed upon him at Constance.

HYACINTH, in botany, a genus of plants. It has a great variety of beautiful flowers, all of which are propagated by seeds, or off-sets from the old bulbs.

HYACINTH, in natural history, a genus of pellucid gems, whose colour is red, with an admixture of yellow.

HYADES, in astronomy, seven stars in the head of the bull, famous among the poets for bringing on rain both at the rising and setting.

* HYADE, in fabulous history, the seven daughters of Atlas, by Æthra, who were called Ambrosia, Endora, Pasithoe, Coronis, Plexaris, Pytho, and Tyche, who bore one common appellation of the Hyades, and were so immoderately grieved for the death of their brother Hyas, who was devoured by a lion, that Jupiter out of compassion changed them into stars, and

and placed them in the head of Taurus, where they still retain their grief, their rising and setting being attended with extraordinary rains.

HYDARIS, or **HYDATIDES**, in medicine, a little transparent vesicle, or bladder full of water, which is sometimes found singly, and sometimes in clusters, upon the liver, and various other parts, especially in dropical constitutions.

* **HYDE (EDWARD)** earl of Clarendon, and lord high chancellor of England, was the son of Henry Hyde, of Pyrton, in Wiltshire, by Mary, the daughter and heiress of Edward Langford, of Trowbridge. He was born at Dinton, the 16th of February, 1608, and was educated at Oxford, from whence he removed to the Middle Temple, where he studied the law. He represented Wotton Bassett, in Wiltshire, in the parliament which began at Westminster April the 10th, 1640; but that parliament being soon after dissolved, he was chosen for Saltash, in Cornwall, in the long parliament, which began the 3d of November in the same year, but being some time after dissatisfied with the proceedings of that body, he retired to king Charles I. and was made chancellor of the Exchequer, a privy counsellor, and knight; at which the parliament were so incensed, that in their instructions to the earl of Essex, they excepted him from any favour. In January 1643 he sat as a member of parliament assembled at Oxford, and in November 1644 he was one of the king's commissioners at the treaty of Uxbridge. Upon the declining of the king's cause he failed to Jersey, and afterwards to France, where, after the death of king Charles I. he was one of the privy-council to Charles II. In 1649 he and the lord Cottington were sent ambassadors extraordinary into Spain, and in 1657 he was constituted lord high chancellor of England. The year before the Restoration, the duke of York falling in love with Anne Hyde, the lord chancellor's eldest daughter, resolved to marry her, which he performed; but carefully concealed it, both from the king and the chancellor. Upon the Restoration he was chosen chancellor of the university of Oxford, and soon after created baron of Hindon, in Wiltshire, viscount Cornbury, in Oxfordshire, and earl of Clarendon in Wiltshire; and on the death of Henry lord Falkland, was appointed lord lieutenant of Oxfordshire. He took care neither to load the king's prerogative, nor encroach upon the liberties of the people. In 1662 he opposed a proposal for the king's

marriage with the infanta of Portugal, and the sale of Dunkirk; however, the following year, articles of high treason were exhibited against him by the earl of Bristol, but they were rejected by the house of lords. In 1664 he opposed the war with Holland. In August 1667 he was removed from his post of lord chancellor, and in November following impeached of high treason by the house of commons, upon which he retired into France, when a bill was passed for banishing him from the king's dominions. He resided at Rouen in Normandy, and in 1668 his life was attempted at Evreux, near that city, by twenty or thirty English seamen, who broke into his chamber, where they found the earl in bed, unable to stand by the violence of the gout, and after having given him many blows with their swords and staves, dragged him on the ground into the middle of the yard, where they encompassed him around with their swords, crying that he had sold the kingdom, and had robbed them of their pay, and an Irishman, named Howard, who conducted them, commanded them all as one man to run their swords through his body; but just at this instant, a dissension arose amongst them, and their lieutenant arriving, disarmed them, and sent sixteen of them to prison. He died at Rouen, the 9th of December, 1674, and his body was brought to England, and interred in Westminster-abbey. He wrote a History of the rebellion, and several other very valuable works.

Mr. Walpole gives the following character of this nobleman, "Sir Edward Hyde," says he; "who opposed an arbitrary court, and embraced the party of an afflicted one, must be allowed to have acted conscientiously. A better proof was his behaviour on the Restoration, when the torrent of an infatuated nation entreated the king and his minister to be absolute. Had Clarendon sought nothing but power, his power had never ceased. A corrupted court and a blinded populace were less the causes of the chancellor's fall, than an ungrateful king, who could not pardon his lordship's having refused to accept for him the slavery of his country. Like Justice herself, he held the ballance between the necessary power of the supreme magistrate, and the interests of the people. This never dying obligation his contemporaries were taught to over-look, and to clamour against, till they removed the only man who, if he could, would have

H Y D

“ have corrected his master’s evil government. Almost every virtue of a minister, made his character venerable. As an historian he seems more exceptionable. His majesty and eloquence, his power of painting characters, his knowledge of his subject, rank him in the first class of writers; yet he has both great and little faults. Of the latter, his stories of ghosts and omens are not to be defended. His capital fault is his whole work being a laboured justification of king Charles. If he relates faults, some palliating epithet always slides in, and he has the art of breaking his darkest shades with gleams of light that break off all impression of horror. One may pronounce on my lord Clarendon, in his double capacity of statesman and historian, that he acted for liberty, but wrote for prerogative.”

HYDRA, in astronomy, a southern constellation, imagined to represent a water-serpent.

The number of stars in this constellation in Ptolemy’s catalogue is twenty-five, and in the Britannic catalogue sixty-eight.

* **HYDRA**, in fabulous history, a serpent in the Marsh of Lerna, in Peloponnesus, represented by the poets with many heads, one of which being cut off, another immediately succeeded in its place, unless the wound was instantly cauterized. Hercules attacked this monster, and having caused Iolaus to hew down wood for flaming-brands, as he cut off the heads applied them to the wounds, by which means he destroyed the Hydra.

HYDRAGOGUES, purgative medicines that evacuate a large quantity of watery or ferous humour.

In general, all sudorific, aperient, and diuretic medicines, are hydragogues.

HYDRAULICS, that part of statics which consider the motion of fluids, with the application thereof, particularly in artificial water-works.

The word is Greek, *udraulis*, an organ, and formed of *udwr*, water, and *aulos*, a pipe, as, at the first invention of organs, a fall of water was employed to produce a wind to sound them, the inventor being unacquainted with the method of applying bellows thereto.

HYDROCELE, *Hernia*, in surgery, a swelling or dropsy in the scrotum. See *Hernia*.

HYDROCEPHALUS, in surgery, a preternatural tumor of the head, arising from preternatural lymph.

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It is of two sorts, internal and external; internal, when the water is collected within the bones of the cranium; external, when retained between the skin and cranium. The first kind is rarely seen but in new-born infants, who are generally in great danger; for, upon an incision, the lymph is no sooner discharged, than the infant dies, as experience has too often convinced us. If the distemper be recent, it will be more adviseable to repeat gentle purges, whilst a large compress dipped in lime-water, spirit of lavender, or Hungary-water, is applied outwardly.

Though an external hydrocephalus be not without danger, it is more easily cured than the other; and this is to be attempted by internal and external remedies, such as cathartics, diaphoretics, diuretics, attenuating and corroborating medicines for internal use; and externally apply digestive aromatic bags made with marjoram, origanum, mother of thyme, pennyroyal, chamomile, &c. warm to the head, and secured by a proper bandage.

Further, it is proper to apply an errhine or cephalic snuff, and chew tobacco, to discharge the lymph from the head. Lastly, some foment with the fumes of burning spirits of wine: but if all these fail, first by blisters behind the ears and on the neck; and if this fail, cup the parts. Longitudinal scarifications much better promote the discharge: after this, the wounds must be dressed with lint spread with a digestive ointment; and to keep them open, add sometimes a little precipitate. Having thus removed the disorder, the wounds should be healed with a vulnerary balsam, and the patient kept to proper internal medicines, and a regular diet.

HYDROCHARIS, the little water-lilly, in botany.

HYDROCOTYLE, marsh-penny-wort, in botany.

This plant is common with us in damp places, and is suspected of hurting sheep that feed on it: whence it is sometimes called white-rot.

HYDROGRAPHY, that part of geography which considers the sea as it is navigable.

It teaches how to measure the sea; gives an account of its tides, counter-tides, currents, soundings, bays, &c. as also its rocks, shelves, sands, promontories, harbours, distances from port to port, with every thing remarkable out at sea, or on the coast.

HYDRO-

HYDROMANCY, the art of foretelling future events by means of water; the same as hydatoscopy.

The other kinds of divination relative to fire, air, and earth, are denominated pyromancy, aeromancy, and geomancy.

HYDROMEL, *Hydromeli*, among physicians, water impregnated with honey, either before or after fermentation: that made by fermentation is called vinous hydromel, or mead, and is esteemed good for the gravel. See *Honey*.

HYDROMETER, an instrument to measure the gravity, density, velocity, force, &c. of water and other fluids. See the articles *Water* and *Fluid*.

The hydrometer is one of the most useful instruments of the philosophic kind; for though the hydrostatical balance be the most general instrument for finding the specific gravities of all sorts of bodies, yet the hydrometer is best suited to find those of fluids in particular, both as to ease and expedition.

This instrument should be made of copper, since ivory imbibes spirituous liquors, and thereby alters its gravity; and glass is apt to break. The most simple kind, used for finding the strength of spirits, consists of a copper-ball *B* *b* (Plate XXIII. *fig. 2.*) with a brass-wire, *A B*, one fourth of an inch thick, soldered into it. The upper part of this wire being filed flat on one side, is marked proof at *m*, because it sinks exactly to this mark in proof-spirits. There are other two marks at *A* and *B*, to shew whether the liquor be one tenth above or below proof, according as the hydrometer sinks to *A* or emerges to *B*, when a brass weight as *C* or *K* has been screwed on at the bottom *c*. There are also weights to be screwed on, for shewing the specific gravities of fluids quite to common water. The round part of the wire above the ball, may be marked so as to represent river-water when it sinks to *RW*, (*fig. 3.*) the weight which fits the instrument for river-water being screwed on at *c*: also when put into spring-water, mineral-water, seawater, and water of salt-springs, it will emerge or rise gradually to the marks *S P*, *M I*, *S E*, *S A*; and, on the contrary, when put into Bristol-water, rain-water, Port-wine, and Mountain-wine, it will successively sink to the marks *b r*, *r a*, *p o*, *m o*.

Another kind which serves to distinguish the specific differences of fluids to great nicety, consists of a large hollow

ball *B*, (*fig. 4.*) with a smaller ball *b* under it, partly filled with quicksilver or small shot, and screwed on to the lower part of the former, in order to render it but little specifically lighter than water: it has also a small short neck at *C*, into which is screwed the graduated brass-wire *A C*, which by its weight causes the body of the instrument to descend in the fluid, with part of the stem.

When this instrument is swimming in the liquor, contained in the jar *I L M K*, the part of the fluid displaced by it, will be equal in bulk to the part of the instrument under water, and equal in weight to that of the whole instrument. Suppose the weight of the whole were 4000 grains, then it is evident we can by this means compare together the different bulks of 4000 grains of various sorts of fluids. For if the weight *A* be such as shall cause the areometer to sink in rain-water, till its surface comes to the middle point of the stem *20*; and if, after this, it be immersed in common spring-water, and the surface is observed to stand one tenth of an inch below the middle point *20*; it is evident that the same weight of each water differs in bulk only by the magnitude of one tenth of an inch in the stem.

Now suppose the stem were ten inches long, and weighed one hundred grains, then every tenth of an inch would be one grain weight; and since the stem is of brass, and brass is about eight times heavier than water, the same bulk of water will be equal to one eighth of a grain; and consequently to the one eighth of one four thousandth part, that is, a thirty-two thousandth part of the whole bulk, which is a degree of exactness as great as can be desired. Yet the instrument is capable of still greater exactness, by making the stem or neck consist of a flat thin slip of brass, instead of one that is round or cylindrical: by this means we increase the surface, which is the most requisite thing; and diminish the solidity, by which the instrument is rendered more exact.

In order to adapt this instrument to all sorts of uses, there ought to be two different stems to screw on and off in a small hole at *a*. One stem should be such a nice thin slip of brass, or rather of steel, like a watch-spring set straight, as we have just mentioned, on one side of which ought to be several marks or divisions, to which it will sink in various sorts of waters, as rain-water, river-water, spring-water,

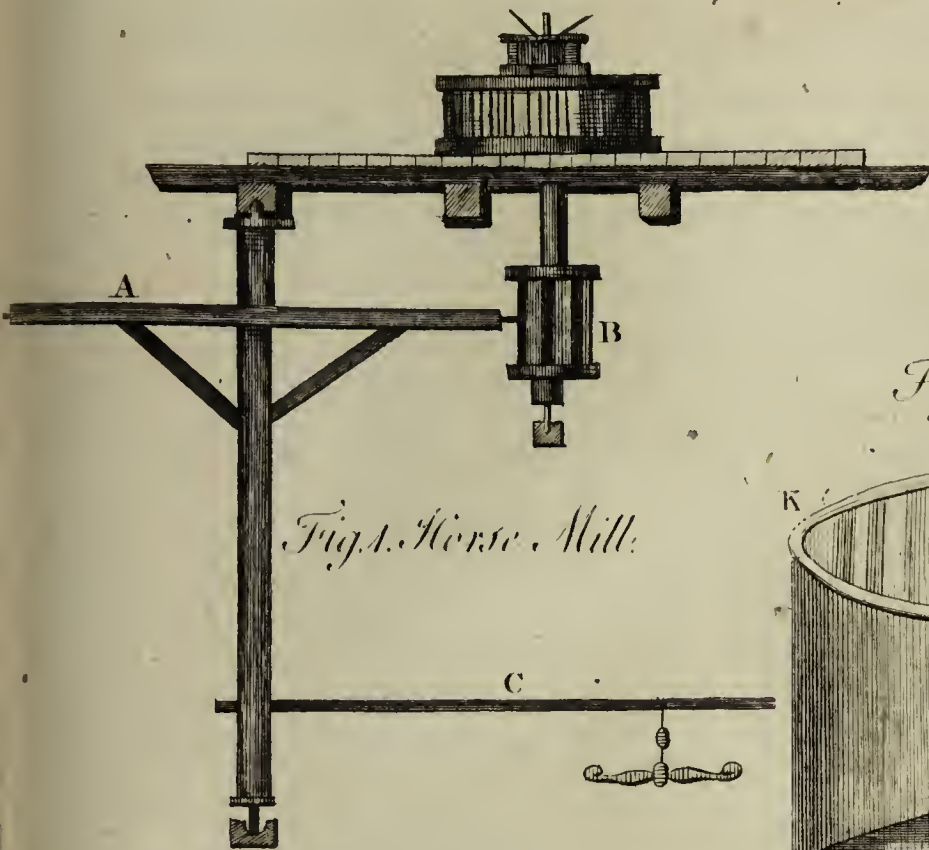


Fig. 1. Horse Mill.

Fig. 2. HYDROMETER

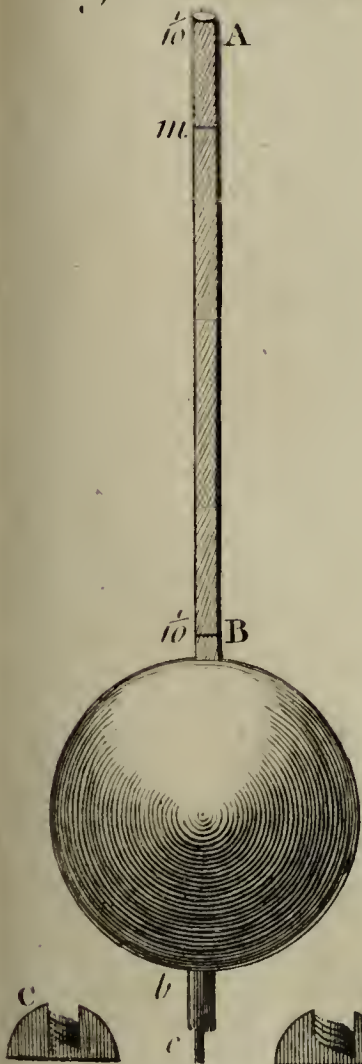
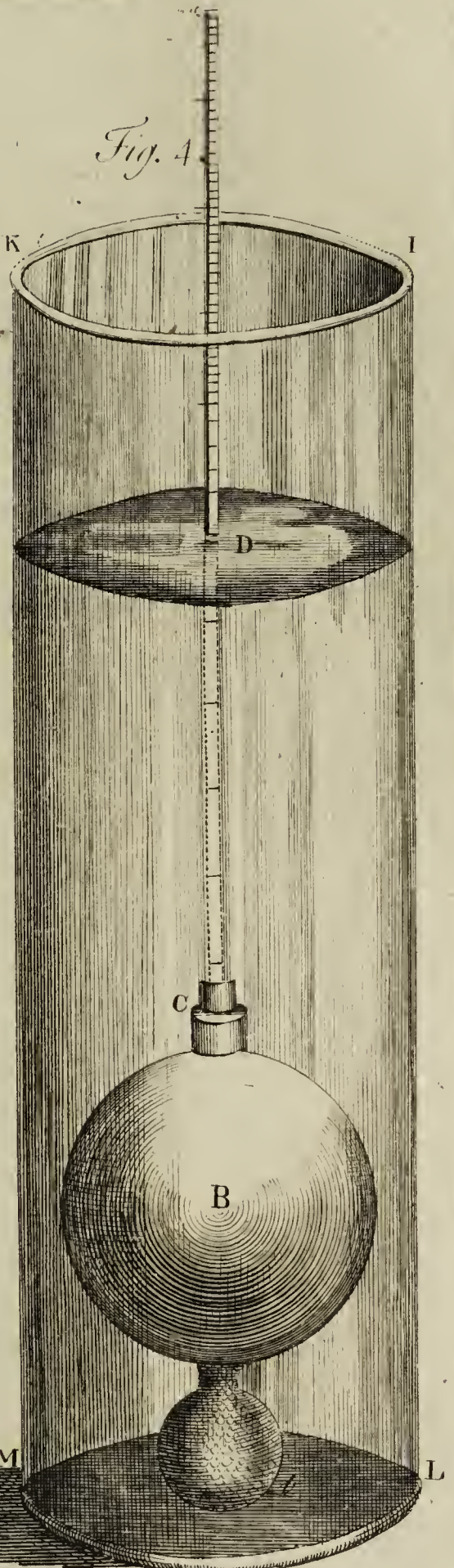


Fig. 3.



Fig. 4.



water, salt spring-water, &c. And on the other side you mark the division to which it sinks in various lighter fluids, as hot Bath-water, Bristol-water, Lincomb-water, Cheltenham-water, Port-wine, Mountain, Madeira, and various other sorts of wine. But in this case the weight A on the top must be a little less than before, when it was used for the heavier waters.

But, in case of trying the strength of spirituous liquors, a common cylindric stem will do best, because of its strength and steadiness; and this ought to be so contrived that, when immersed in what is called proof-spirit, the surface of the spirit may be upon the middle point 20; which is easily done by duly adjusting the small weight A on the top, and making the stem of such a length that, when immersed in water, it may just cover the ball, and rise to 2; but when immersed in pure spirit, may arise to the top at A: then by dividing the upper and lower parts 20, A 20, into ten equal parts each, when the instrument is immersed in any sort of spirituous liquor, it will immediately shew how much it is above or below proof.

This proof spirit consists of half water and half alcohol, or pure spirit, that is, such as when poured upon gun-powder, and set on fire, will burn all away, and permit the powder to take fire, which it will, and flash as in the open air. But if the spirit be not so highly rectified, there will remain some phlegm or water, which will make the powder wet, and unfit to take fire. This proof-spirit of any kind, weighs seven pounds twelve ounces per gallon.

The common method of shaking the spirits in a vial, and by raising a crown of bubbles, to judge by the manner of their rising or breaking away whether the spirit be proof or near it, is very precarious and capable of great fallacy. There is no way so easy, quick, certain, and philosophical, as this by the *aréomètre*, which will demonstrate infallibly the difference of bulks, and consequently specific gravities, in equal weights of spirits, to the 30, 40, or 50 thousandth part of the whole, which is a degree of accuracy, beyond which nothing can be desired.

HYDROMETRY, *Hydrometria*, the mensuration of fluids, their gravity, velocity, quantity, &c.

The word is of the same original with the preceding. It includes both hydrostatics and hydraulics.

HYDROMPHALUS, in medicine and surgery, a tumor of the navel, containing water.

The hydromphalus, when viewed between the eye and the light, is found to be transparent. It is dissolved by emollient and resolutive medicines, as also by a puncture in the middle of the navel.

HYDROPHOBIA, in medicine, a dread of water, which is a symptom arising in a person who has been bitten by a mad dog, or other mad animal.

The symptom is not peculiar to this distemper, though it be always an attendant; for we meet with several instances of fevers accompanied with a dread of water.

Dogs, wolves, and foxes, are most frequently affected with this madness, and that without any previous bite from another animal. With respect to the propagation of this distemper from brutes to mankind, the disease seems to be inoculated by the bite into the animal, which receives it; for the wound festers some little before or about the time the distemper begins to appear. Something very like this happens in the inoculation of the small-pox.

The signs of approaching madness in dogs are, according to Boerhaave; they become dull, and endeavour to hide themselves; they are mute, as to their bark; but they make a kind of murmuring noise, refusing, at the same time meat and drink; they fly at strangers; but in this stage, which is the first, they remember and respect their masters; their ears and head hang; and they walk nodding, as if overpowered by sleep. A bite received at this time is very dangerous; but not of the worst kind. Then they begin to pant and hang out their tongue, to emit a great deal of froth from the mouth, which they keep perpetually open; sometimes they walk slowly, and as if half asleep; and then suddenly run, but not always directly forward: at last they forget their masters; mean time their eyes look dull, full of tears and red; their tongue is of a lead colour; they are suddenly extenuated, and now rage excessively. They seldom survive this stage thirty hours; and a bite received at this time, as Boerhaave says, is incurable. But the more raging the animal is, the more dangerous is the bite, and the more violent are the subsequent symptoms, and *vice versa*.

Two other circumstances, which Boerhaave has omitted, are, that all other dogs,

upon smelling the dog going mad, will avoid him, and run away with horror, shaking their heads with some vehemence. The other circumstance is, that the tone of the dog's voice, when he barks, will be quite altered from what it was, and seem hollow and hoarse. And though, as Boerhaave observes, the dog may be mute in the dumb madness; yet it is more frequently found, that a dog, especially if confined, shall bark for a day or two without ceasing. There is no poison known which produces such terrible effects as that communicated by a mad animal, nor which induces such a change in a person who receives it; or which rages with such violence, and so suddenly, when it once begins to act.

In a person affected with this disorder, among other extraordinary symptoms, the approach of any liquor to the body, especially to the tongue and lips, produces an incredible uneasiness, trembling, convulsions, and a state next to direct madness: and at the same time the patient is racked with an insatiable thirst.

In general, Boerhaave affirms, that there is no certain preservative against this disorder yet known; and that there is no example, that can be depended upon, of any one having been recovered, who was once so far gone as to dread water. This author adds, that it is much to be lamented, that after the common methods have been put in practice perpetually without success, for so many ages, others have not been tried. All the celebrated remedies for this purpose, he adds, owe their reputation either to barren speculation, or to great confidence in the reports of others.

His own directions, however, are, 1. As soon as the poison is received into the body, the part affected, and those adjacent thereto, should have deep scarifications made in them. Then large cupping-glasses to be applied, or the part to be burnt pretty deep with the actual cautery, and afterwards kept in continual suppuration. During the whole of this time, the part is, without interruption, to be fomented with a pickle of sea-salt and vinegar. 2. The cloaths, &c. which have come near the poison to be thrown away. 3. The patient is, immediately after receiving the misfortune, to be thrown head-long into the sea, or some river, with threatening words, and other circumstances capable of striking terror into him; for which purpose he is frequently to be immersed in the water, and again

taken up: for the good effects are only produced by the dread and consternation into which the mind is thrown. He is frequently to be purged with rhubarb, agaric, and the juice of elder-bark. 4. Let the patient have a gentle sweat excited every morning before eating. 5. His feet and hands are to be daily fomented in a bath of water. Lastly, let him frequently drink cold water, till he vomit it up: use acidulated liquors often: his diet must be moist, light, and laxative, and take them so liberally as to vomit them again. He must abstain from large quantities of aromatic substances, wine, &c. violent exercise of body, and all commotions of mind.

The cure is principally to be attempted in the first stage, or the beginning of the second. It seems probable, says he, the following method may be of some efficacy, especially as it is confirmed by some few experiments. Immediately upon the signs of approaching madness, the case is to be treated as extremely inflammatory; wherefore a large quantity of blood must be taken away by a large orifice, even till the patient is faint: then directly inject nitrous clysters, mixed with a little vinegar. Let these be repeated boldly, and more frequently than is consistent with prudence in other cases. After this the eyes are to be blindfolded, and he thrown into a pond, or cold water thrown upon him, till he be no longer afraid of it. Then let him be immediately forced to drink a large quantity of water; and toward the evening of the same day let a sleep be procured.

We have an account of remedies for this malady in the Philosophical Transactions; one of which is the lichen cinereus terrestris, or ash-coloured liverwort, which has been taken into the College Dispensatory, under the title of *Pulvis Antilyssus*, and is the celebrated remedy published by Dr. Mead, with some variation in the proportion of the pepper. The directions, as made public, are, first to take away nine or ten ounces of blood; and then take of powdered ash-coloured liverwort, four drams, and of the powder of black pepper, two drams: mix these together, and divide into four doses; one of which is to be taken fasting for four days successively, in half a pint of tepid cow's milk. After taking these four doses, the patient is to be put fasting every morning for a month, either into a cold bath, cold spring, or river, remaining therein with his head above water, not longer than

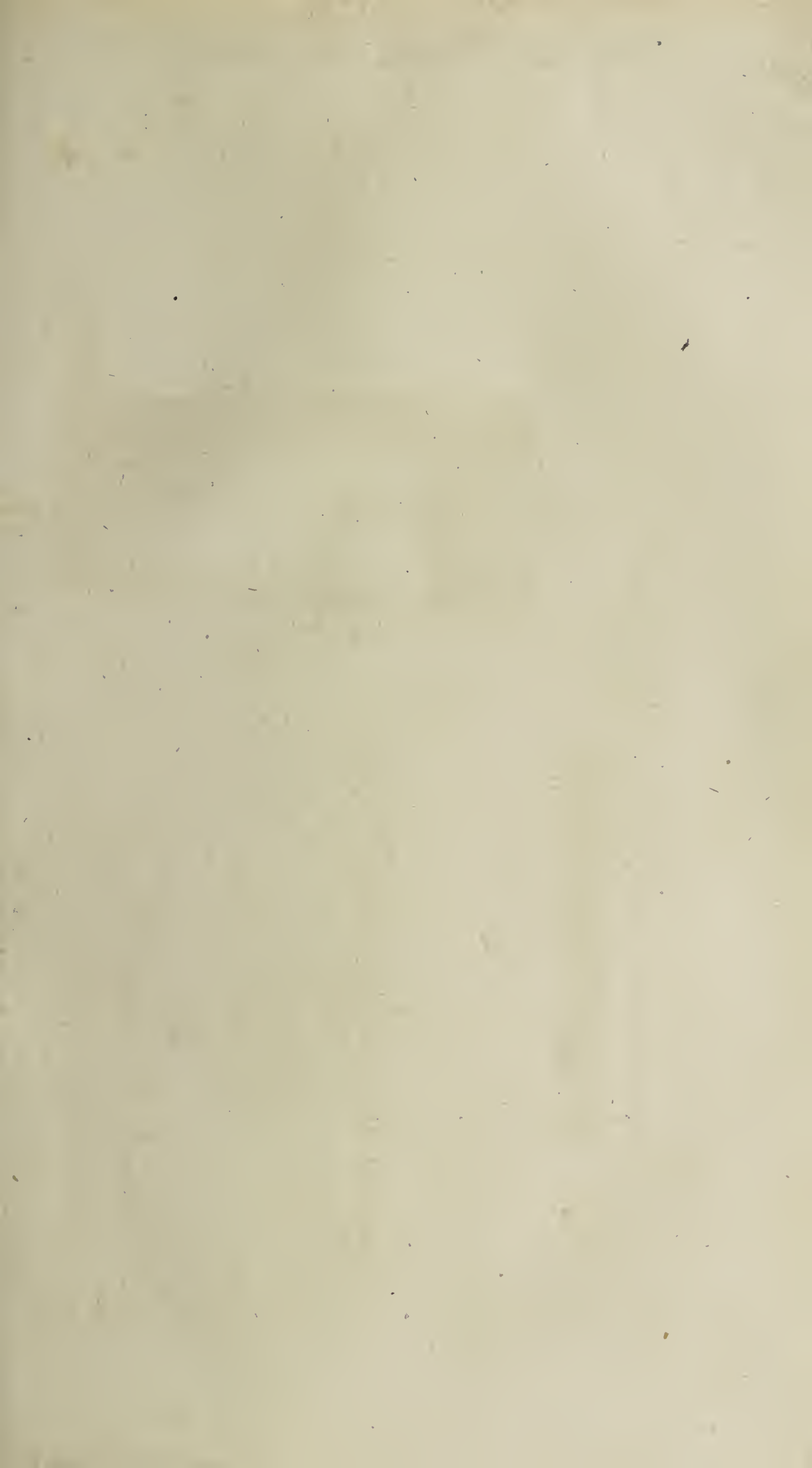


Fig. 1.



BRADFORD'S HYDROSTATIC INSTRUMENT

Fig. 2.

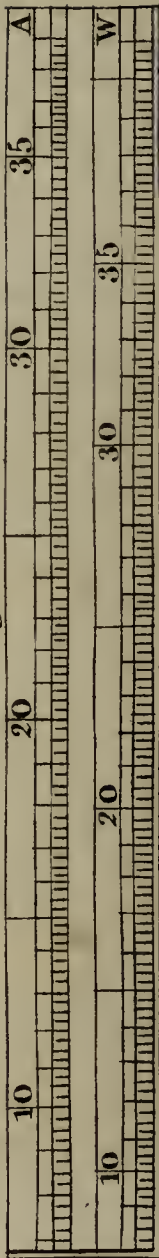
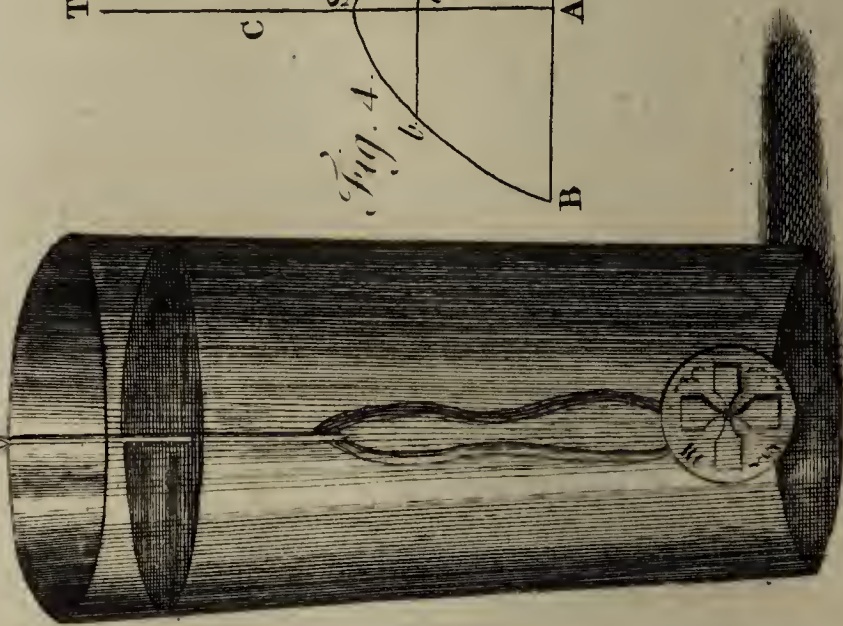
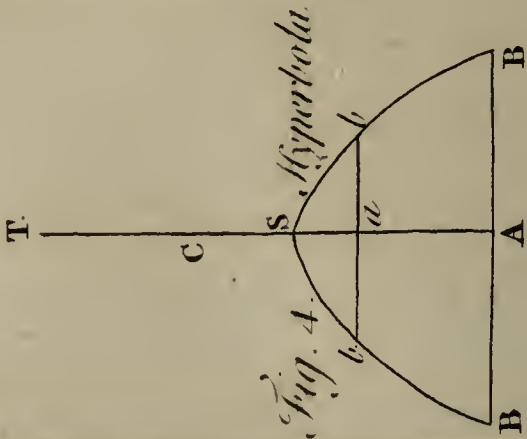


Fig. 3.



than half a minute, if the water be excessively cold. Then let him bathe thrice a week for fifteen days.

Boerhaave, in his Aphorisms, treating of the canine madness, would have us not to despair of discovering a peculiar antidote against this singular kind of poison: and this, says he, we are encouraged to hope for, from the certain instances we already have of remedies effectual against particular sorts of poison. Accordingly he had a mind to try what effect mercury would have upon animals under canine madness; and from several experiments, he found it prove successful, by administering some grains of turpeth mineral made into boluses. He also mentions the remedy which M. Default tried with constant success in the hydrophobia, which is a mercurial ointment made of one third part of mercury revived from cinnabar, one third part of human fat, and as much of hog's lard. One or two drams of this ointment at a time should be rubbed by intervals, or successively, upon and about the wound. As a farther confirmation of the efficacy of mercury in the canine madness, he takes notice of a medicine Mr. Cobb of Busselton, near Bristol, brought from Tonquin, which is much celebrated in the East-Indies as efficacious in this distemper; this is a native and factitious cinnabar, of each twenty-four grains; musk, sixteen grains, powdered and mixed well together. This powder is to be taken all at once in a tea-cup of arrack, which is said to secure the patient for thirty days: after which time the dose is to be repeated in the same manner; but it should be done as soon as possible after the bite is received: but if the patient have any symptoms of the disease, the second dose must be repeated three hours after the first; and this is said to be sufficient for a cure.

HYDROPIA, a dropsical patient; or a person swelled and bloated with the abundance of water. See the article *Dropsy*.

HYDROSCOPE, an instrument anciently used for the measuring of time.

The hydroscope was a kind of water-clock consisting of a cylindrical tube, conical at bottom; the cylinder was graduated, or marked out with divisions, to which the top of the water becoming successively contiguous, as it trickled out at the vertex of the cone, pointed out the hour. See *Clepsydra*.

HYDROSTATICAL BALLANCE, a kind of ballance contrived for the easy

and exact finding the specific gravities of bodies, both liquid and solid. See the article *Hydrostatical BALLANCE*.

Bradford's New **HYDROSTATICAL INSTRUMENT**, a new invention for weighing coin, and discovering its defect either of weight or purity.

It consists of a thin, flat, brass-ruler, about half a foot long; on each side of which are two graduated lines, those on the upper side being marked A and W (*Plate XXIV. fig. 1.*) and those on the under side B and W (*fig. 2.*) There is also a small chain and pincers wherein to fix any piece of money intended to be weighed and proved; together with two pair of center pins, marked A and B, (*fig. 3.*) whereof the former pair A are to be used for proving all pieces of gold not exceeding the value of 36s. and the other pair marked B, for all pieces from 36s. to 27s. or 3l. 12s. Lastly, there is a sliding piece or index C, (*fig. 3.*) by the motion of which backwards and forwards upon the ruler, the value of any piece suspended in the pincers is found upon the graduated lines already mentioned; whereof those marked A and B are called statical lines, and being calculated for weighing the piece in air; and those marked W, W, are called hydrostatical lines, as serving to point out the alloy or adulteration of the piece weighed. A whole division on each line, is equal to the weight or value of 1s. in gold; a half division to 6d. and a quarter division to 3d.

To prove a guinea: first suspend it in the pincers, and then placing the inside of the sliding-piece C to 21 on the line A, on the upper side of the ruler, which must move freely on the center-pins marked A; and if the guinea and sliding-piece exactly ballance each other, the guinea is full weight: if not, move the slider backward or forward, till they equiponderate, and the division cut by the inside of the slider is the true weight; for instance, suppose it rests at $20\frac{1}{2}$, then does the guinea weigh only 20s. 6d. In the next place, to prove the alloy of this piece, let the slider be brought to the division $20\frac{1}{2}$ upon the hydrostatical line marked W; for whatever division is cut by the slider, in weighing on the statical line, it must be placed at the same on the hydrostatical line adjoining. Then let the piece together with the pincers, and the brass-link whereon it is suspended, be immersed in water (*fig. 3.*) as far as the notch in the said link; and if the instrument acts in

equilibrio, or the piece sink deeper in the water, the guinea is standard-gold; but if the slider must be moved farther backward before it will equiponderate, the guinea is adulterated. If alloyed with silver, allow 2 s. for every penny it wants in the hydrostatical weight; and then, if the number of pence the piece is deficient in weight hydrostatically, when doubled, exceed the number of shillings it weighs statically, you may conclude it is adulterated with some baser metal than silver. However, a more speedy method of discovering whether a piece of gold be adulterated or not, without moving the slider more than once, is this: when you have weighed a piece statically, bring the slider to the division on the hydrostatical line expressing its weight; and immersing the piece and pincers as before, so that the surface of the water may be exactly at the notch or mark on the long link, if the instrument doth not then equiponderate, gently lower your hand that holds the fluid till the instrument comes to an equilibrium; at which time, if the guinea be a counterfeit, great part of the pincers will appear above water; and if a 36 s. piece be tried, not only the pincers, but a small part of the coin will appear above the surface, if the piece be counterfeit. This last method is sufficiently near the truth for common practice.

If you should have occasion to weigh and prove a very small piece of gold, as 5 s. 3 d. or 4 s. 6 d. the method is to put the said piece in the pincers, with some other piece that has been proved before; by which means, the weight and alloy of the small piece may be easily discovered, as above. And if the piece be above 36 s. then the slider is to be placed according to the divisions of the statical and hydrostatical lines on the under side of the instrument; which is fitted to the standard of the Mint, that makes the guinea to weigh 129 grains.

HYDROSTATICS, that part of mechanics which considers the gravity and æquilibrium of fluid bodies, particularly water, and of solid bodies immersed therein.

As to the laws of hydrostatics, with the application thereof, see *Fluid*.

Hydrostatics and hydraulics are treated by some authors promiscuously.

Those who are acquainted but the least with the ancient Egyptians, know that they found the way to keep their river within proper bounds, and to make a good use of its salutary waters, whether it

were by spreading them over their plains, or raising them to considerable heights.

Among the Greeks, Aristotle was the first that wrote of the æquilibrium of fluids, and reduced the flight of birds, the motion of fishes, and the direction or steering of ships, to the rules of mechanics.

It is well known with what address Archimedes, who came after Aristotle, discovered the cheat of the goldsmith of king Hiero.

This famous mathematician also invented that cochlea or screw, which, by the motion of an inclining cylinder, makes the water rise, while the other falls. The water acts by its own gravity in this simple machine, but it cannot be carried very high. See the article *Archimedes's Screw*.

Ctesibius, by making use of a more compounded machine, which has kept the name of its inventor, knew how to make the water rise to all sorts of heights; and is in use at present, as are the several sorts of pumps. But of the inventions of the ancients, there is none of greater importance than that of water-mills; for, as Vitruvius describes them, they seem to have resembled ours pretty much. It is true they were not so common then as they are now-a-days.

The moderns knew but little of hydrostatics before Galileo. This great man, being of the same opinion with the ancients, that there was no vacuum in nature, attributed the elevation of the water in the sucking-pump to the abhorrence of a void. Torricelli, his disciple, remarked, that when a tube, close at the upper end, was immersed into a vessel full of mercury, the mercury remained suspended in the tube at a certain height, and that it filled into the vessel, when the tube was open. Torricelli communicated this experiment, but without referring it to the true cause; but by repeating it often, he conjectured that it might be the effect of the weight of the air.

M. Pascal laid hold of the notion, and after being assured of the fact by experiments which he made, and published anno 1647, he endeavoured, in 1648, to certify himself of the cause: and at length, from his experiments, he knew what Torricelli had only conjectured: and what the great duke's mathematician had said doubtfully, M. Pascal demonstrated by the famous experiments he made on the pit of

Domme,

Domine, and afterwards in the treatises he published.

The experiments which have been made, in order to know the properties of fluids, moved M. Mariotte to make several observations which had not been touched on before; whereby he enriched hydraulics with a number of discoveries on the measure and expence of conveying water, according to the different heights of the reservoirs and their various adjuncts. Afterwards he examined what concerns the conducting of water, and the strength requisite in pipes for resisting their different gravities.

M. Mariotte had a good deal of knowledge and dexterity in removing difficulties, and was singularly happy in making experiments, which he performed for the most part at Chantilly, and at the Royal Observatory. He nevertheless neglected what concerned the different pumps and other machines which might raise water. This part of the hydrostatics had been touched but very imperfectly when the chevalier Morland undertook to treat of it. If he hath not exhausted the subject, he has at least given light enough for carrying on the theory and practice of it very far.

HYGROMETER, or HYGROSCOPE, a machine whereby to measure the degrees of the dryness or moisture of the air.

In the Philosophical Transactions we have several methods of constructing hygrosopes.

The word hygroscope and hygrometer are commonly both used in the same sense. However, Wolfius makes some difference betwixt a hygroscope and an hygrometer, arising from the etymology; the former only shewing the alterations of the air, in respect of humidity and dryness; and the latter measuring them.

HYMEN, in anatomy, signifies a membrane in general: but it is commonly taken for that circular membranous fold, with which the anterior extremity of the great canal in virgins, and especially before the first eruption of the menses, is commonly bordered. It is generally ruptured after the consummation of marriage; is quite lost in delivery; and afterwards only some irregular portions of it remain, which, from their supposed resemblance to myrtle leaves, have been termed *carunculæ myrtiformes*. This circle may also suffer some disorder by too great a flux of the menses and other particular accidents. *Winslow.*

* **HYMEN**, the god of marriage, was the son of Bacchus and Venus Urania. He was represented of a fair complexion, crowned with sweet marjoram or roses, and dressed in a saffron-coloured robe, with shoes of the same colour, carrying in his hand a lighted torch.

HYMN, a religious song. The hymns sung in the Christian church, as distinguished from the psalms, are pieces of poetry composed by pious, but not inspired, authors.

HYOIDES, in anatomy, a forked bone at the root of the tongue; it is situated in the middle space between the angles of the lower jaw; it is a little bone, and resembles, in some measure, the basis of the lower jaw.

HYOTHYROIDES, in anatomy, a muscle of the larynx, which serves to raise it, and constrict the glottis.

HYPALLAGE, among grammarians, a species of hyperbaton, consisting in a mutual permutation of one case for another.

HYPER, a Greek preposition, frequently used in composition, where it denotes excess; its literal signification being above, or beyond.

HYPERBATON, in grammar, a figurative construction inverting the natural and proper order of words and sentences. The several species of the hyperbaton are, the anastrophe, the hysteron proteron, the hypallage, synchysis, tmesis, parenthesis, and the hyperbaton, strictly so called.

HYPERBATON, strictly so called, is a long retention of the verb which completes the sentence.

HYPERBOLA, in geometry, one of the curve lines formed by the section of a cone.

The plane of every hyperbola is proportioned by this general theorem:

“As the sum of the transverse and any abscissa, multiplied into that abscissa, is to the square of its semi-ordinate; so is the sum of the transverse and any other abscissa, multiplied into the abscissa, to the square of its semi-ordinate.”

That is, if TS (*Plate XXIV. fig. 4.*) be the transverse diameter, and Sa , SA , abscissas, and ba , BA , semi-ordinates: then is $Ta = TS + Sa$, and $TA = TS + SA$. And it will be $Ta \times Sa : \square ba :: TA \times SA : \square BA$. That is, $TS + Sa \times Sa : \square ba :: TS + SA \times SA : \square BA$.

These proportions are the common property of every hyperbola, and differ only from

from those of the ellipsis in the signs $+$ and $-$. See *Ellipsis*.

To find the focus of any hyperbola.

The focus being that point in the hyperbola's axis, through which the latus rectum must pass, as in the ellipsis and parabola, it may be found by this theorem :

" To the rectangle made of half the transverse into half the latus rectum, add the square of half the transverse ; the square root of that sum will be the distance of the focus, from the center of the hyperbola.

HYPERBOLE, in rhetoric, a figure, whereby the truth and reality of things are excessively either enlarged, or diminished. See the article *Exaggeration*.

The character of an hyperbole is to exaggerate or extenuate the idea of the things spoken of beyond the bounds of truth, or even probability. As, he ran swifter than the wind : he went slower than a tortoise, &c. Hyperboles, says Seneca, lie without deceiving ; they lead the mind to truth by fictions ; they convey the sentiment intended, though by expressing it in terms which render it incredible. The hyperbole promises too much, in order to make you conceive enough.

Aristotle observes, that hyperboles are the favourite figures of young authors, who love excess and exaggeration ; but that philosophers should not use them without a great deal of reserve. The pitch to which an hyperbole may be carried, is a point of great delicacy. To carry it too far, is to destroy it : it is of the nature of a bowstring, which by immoderate tension, slackens ; and frequently has an effect quite contrary to that intended.

HYPERBOLICAL *Cylindroid*, in geometry, a solid figure, whose generation is given by Sir Christopher Wren, in the *Philosophical Transactions*, N^o 48.

There are two opposite hyperbolas joined by the transverse axis ; and through the center there is a right line drawn at right angles to that axis ; then the hyperbolas are supposed to revolve, by which revolution a body will be generated, which he calls an hyperbolical cylindroid ; and whose basis, and all sections parallel to them, will be circles. And in N^o 53, of the *Transactions*, he applies it to the grinding of hyperbolical glasses ; and he says they must be either formed this way or not at all.

HYPERBOLICUM ACUTUM is a

solid made by the revolution of the infinite area of the space contained between the curve and the asymptote, in the Apollonian hyperbola, turning round that asymptote. This produces a solid or body infinitely long ; and yet, as Torricellius plainly demonstrates (who gave it this name), it is equal to a finite magnitude.

HYPERBOLIC *Spindle*. See *Hyperbolic SPINDLE*.

HYPERBOLIFORM FIGURES, are such curves as approach, in their properties, to the nature of the hyperbola, called also hyperboloides.

HYPERCATALECTIC, in the Greek and Latin poetry, is applied to a verse, which has one or two syllables too much ; or beyond the regular and just measure : as,

Musæ sorores sunt Minervæ. Also,
Musæ sorores Palladis lugent.

The Greek and Latin verses are distinguished, with respect to their measure, into four kinds, acatalectic, catalectic, brachycatalectic, and hypercatalectic.

The hypercatalectic is also called the hypermeter.

HYPERDULIA, in the church of Rome, a species of worship paid to the Holy Virgin ; being greater than the dulia, or worship paid to the saints, but less than the latria or supreme worship paid to the Deity.

HYPERICUM, St. John's wort, in botany, a perennial plant which grows wild in woods and uncultivated places, and flowers in June.

This plant has been recommended as a medicine of peculiar efficacy in hysterical, hypochondriacal, and melancholic disorders, and alienations of mind ; from its supposed virtue in which cases, it received the name of *fuga dæmonum*. It promises to be of some use as a mild detergent and corroborant, discovering to the senses a resinous, bitterish, balsamic impregnation.

HYPERMETER, in the ancient poetry, the same with hypercatalectic.

HYPHEN, an accent, or character, in grammar, implying that two words are to be joined, or connected into one compound word, and marked thus -, as pre-established, five-leaved, &c.

Hyphens also serve to connect the syllables of such words as are divided by the end of the line.

HYPNOTIC

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HYPNOTIC, in the materia medica, such medicines as any way produce sleep, whether called narcotics, hypnotics, opiates, or soporifics.

Authors are of various opinions in regard to the manner wherein hypnotics operate. See the article *Narcotics*.

HYPOCAUSTUM, among the Greeks and Romans, a subterraneous place, wherein was a furnace, to heat the baths.

Another kind of hypocaustum was a kind of kiln, to heat their winter parlours.

Among the moderns, it is that place where the fire is kept, that warms a stove or hot-house.

HYPOCHONDRIA, in anatomy, that part of the body on both sides; which lies under the spurious ribs, and is extended to the ilia; comprehending not only the muscles, but the internal viscera.

HYPOCHONDRIAC Affection, Passion, or Disease, Morbus Hypochondriacus, vulgarly called the spleen, vapours, &c. in medicine, a disorder that principally exerts its tyranny under the ensiform cartilage and spurious ribs, in the region of the hypochondria.

The hypochondriacal disease chiefly affects the abdominal viscera, viz. the stomach and intestines, the liver, spleen, pancreas, and mesentery, according to the peculiar nature of each of them. The stomach is disordered with frequent ructus's and flatulencies, the signs of crudities. The liver is swelled with thick viscid bile, obstructing its ducts. When the spleen is affected, the function of which seems to be, to convey a very fluid blood through its arteries, partly into its own cells, partly into the splenic vein, for the uses of the liver, this blood grows so thick as almost to stagnate in that vein, whereby this soft organ is tumefied and distended. If the pancreas be affected, the glands which secrete the pancreatic juice, grow schirrous in some degree; and perform their office too sparingly: hence the bile, which mixes with it in the intestines, is not sufficiently diluted; and the chyle being too thick, passes with difficulty through the lacteals, and in some measure stagnates in its passage. When the omentum is disordered in this disease, the thin subtil oil, which is collected in its cellules, in order to be conveyed to the liver, and there to be mixed with the blood brought thither from the spleen, passes in lesser quantities than usual,

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whereby the blood in the vena portarum is not rendered thin and fluid enough. In fine, the consequence of the mesentery being affected is, that through the obstruction of its glands, and subsequent deficiency of the lymph; which they ought to secrete for the dilution of the chyle; this liquor becomes too thick, and less proper for nutrition. Hence, it manifestly appears, that in this disease the blood and humours grow thick and sluggish, and are rendered unfit for their respective motions, and the uses of life.

This disease, so various in appearance, is chiefly owing to two causes, rest of body, and agitation of mind: by the former, the humours are rendered too sluggish in their motions; and by the latter, the blood at one time almost stagnates, and at another is driven on with excessive vehemence: and health must suffer in both cases.

This theory plainly points out the cure, which consists in purging off and correcting the humours. Yet the disease does not require strong cathartics; it is much safer to trust to the milder sort, such especially as attenuate the humours, and work by stool and urine at the same time. Of this kind are the deobstruent pills, aloetics blended with saponaceous medicines, rhubarb, Glauber's salt, and the like.

The lentor and thickness of the humours are most conveniently removed by chalybeates, bitters, and aromatics, especially in tinctures. And natural chalybeate waters are the most efficacious of all steel medicines.

In fine, all sorts of bodily exercise are necessary; and in particular, it will be of great service to play at bowls or tennis, or to toss the arms briskly to and fro with weights grasped in the hands; but nothing is better than riding daily on horseback. *Mead's Morbis & Præcepta*.

HYPOCISTIS, in pharmacy, an inspissated juice, much resembling the true Egyptian acacia. We meet with it in moderately large, flat masses. It is considerably hard and heavy, of a fine shining black colour like that of liquorice juice, when fresh broken, and of a dusky black on the surface. It is brought to us from the Levant, and from some parts of Europe. The French make a good deal of it from the plants of their own growth, and sometimes supply other places with it.

This plant is very common in the island of Crete, and a considerable quantity of the

H Y P

the inspissated juice is prepared there in the same manner. They gather the fruits, while unripe, and express the juice, which they evaporate over a very gentle fire to the consistence of an extract, and then form into cakes, and expose to the sun to dry.

Hypocist is an astringent, and that of considerable power: it is good against diarrhoeas and hæmorrhages of all kinds, and may be used in repellent gargarisms in the manner of the acacia; but is very rarely met with genuine in our shops, the German acacia being usually sold under its name.

HYPOGASTRIC, an appellation given to the internal branch of the iliac artery.

HYPOGASTRIC VEINS arise on each side from the iliacs, and send out branches to the rectum.

HYPOGASTRIUM, in anatomy, the lower part of the abdomen.

HYPOPYON, in medicine, a collection of purulent matter, immediately under the cornea, near the aqueous humour.

The principal methods of cure are three: the first and mildest is the use of resolvent medicines, externally applied: to these may be added bleeding and purging: but when the pains and other symptoms increase, an operation is absolutely necessary.

Heister, before he treats of the operation, describes a method used by one Justus, a celebrated oculist in Galen's time; which was, after placing the patient conveniently before him, to lay hold of his head with both hands and shake it very assiduously about, till the matter disappeared, being thereby undoubtedly thrown down behind the uvea. This, Heister's own experience confirmed him in: only he would have the patient's head or whole body disposed in a supine posture, and the eye pressed gently with the fingers to loosen the matter.

But if this proves unsuccessful, the patient being seated as in the couching for a cataract, an incision is made with a lancet, through the cornea, below the pupil, and about the space of a line from the white of the eye, and this large enough to discharge the matter and aqueous humour, pressing the eye gently by the fingers, and taking care lest you wound the uvea: then a compress, moistened with a proper collyrium, is to be applied every third or fourth hour to the eye.

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If the matter be too thick to be discharged, the needle, which is also employed for making setons, is to be used. The instruments should be wrapped up, so that only the point be bare. In this case, St. Ypres advises to introduce a small probe, or inject some cold water with a syringe, and continue this till the whole pus be dissipated, after which the wound may be healed.

HYPOSTASIS, among divines, signifies a person, or substance; chiefly used in speaking of the persons of the Trinity.

HYPOTHECA, in the civil law, the same with mortgage in the common law.

HYPOTHENUSE, or HYPOTHE-NUSE, in geometry, the longest side of a right-angled triangle, which subtends the right angle.

The 47th proposition of Euclid's first book demonstrates that, in every rectilinear right-angled triangle, the square of the hypotenuse is equal to the squares of both the other sides. It is particularly called the Pythagorean problem, from its invention by Pythagoras, who is said to have sacrificed a whole hecatomb to the muses, in gratitude for their assisting him in the discovery.

HYPOTHESIS, in logic, a proposition, or principle, which is taken for granted, in order to draw conclusions therefrom, for the proof of some point in question.

HYPOTHESIS, in physics, &c. an imaginary system laid down, to account for some phenomenon of nature.

Whatever is not derived from phenomena, says Sir Isaac Newton, is an hypothesis; and no hypotheses of any kind are to be admitted in experimental philosophy.

HYPOTHESIS, in astronomy, is more particularly applied to the several systems of the heavens, as different astronomers have supposed the arrangement and motion of the heavenly bodies. The principal of these are, the Ptolemaic, Copernican, and Tychonic systems.

HYPOTRACHELION, in architecture, denotes a little frieze in the Tuscan and Doric capitals, between the astragal and annulets, called likewise colerin, gorgerin, &c. By some it is applied to the neck of any column, or that part of the capital below the astragal.

HYSSOP, in botany, a low shrubby medicinal plant. It is perennial, cultivated in our gardens, and flowers in July and August.

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The whole plant has an acrid taste, and a very strong smell: it is attenuant and discutient. It is greatly recommended in disorders of the lungs, when they are loaded with a foul and thick matter. It also strengthens the stomach, and assists digestion; it promotes expectoration by its acrimony, and by its power of attenuating the viscous matter in the lungs, and is therefore good in moist asthmas: its good effects in the stomach are of the same kind, depending on its attenuating and absterging the viscous phlegm lodged there, and impeding in it the discharge of its proper functions. It is also good in diseases of the head; it is best taken in infusion, in the manner of tea, not made so strong as to be disagreeable to the palate, and often repeated. The distilled water, by some made choice of as a basis for pectoral mixtures and julaps, does not appear superior or equal to the infusion.

Externally, hyssop is greatly recommended in bruises; the blackness settling under the eyes from blows is carried off very readily by a cataplasm of the leaves, or only a little bundle of them sewed up in a linen rag, and applied to the part: and Ray gives us an account from Mr. Boyle, of a violent contusion of the thigh, from the kick of a horse, very happily cured by this herb, boiled as a cataplasm; he tells us, the violent pain was almost instantly removed, and the very mark and blackness taken off in a few hours.

HYSTERICAL Disease, HYSTERIC Affection, or Passion, in medicine, a disease in women, likewise called a suffocation of the uterus, or fits of the mother.

There is no disease so vexatious to women as that called hysterical; and although it may not be attended with great danger, yet it is frequently very terrifying; and it also sometimes deprives them of their senses as effectually, as if they had been seized with an epileptic fit.

When a woman has fallen into an hysterical fit, blood-letting will be of use, if she has strength to bear it; if not, cupping-glasses are to be applied to her groins or hips: but if she continues long in it, put the snuff of a candle, or some other

thing of a foetid smell, to her nostrils, in order to rouse her. In the mean time her thighs and legs ought to be rubbed.

When she is recovered from the fit, proper means must be used to prevent a relapse. If she be liable to obstructions, and not regular, the menstrual discharges are to be promoted. The strong smelling gums and steel medicines are very serviceable, and it is very beneficial to use exercise. But the disturbances of the mind generally require proper remedies. *Mead.*

HYSTERIC COLIC, a common symptom of the hysterical passion, attended with a most violent pain about the pit of the stomach; as also with a vomiting of a greenish humour, and great sinking of the spirits. After a day or two the pain goes off, but upon the slightest motion or perturbation of the mind it soon returns again.

Neither bleeding nor cathartics have any place in the cure. According to Sydenham, it will be proper first to advise the patient to drink upwards of a gallon of posset-drink, to clear the stomach of its impurities, by throwing it up again, that the paretic may not be hindered; afterwards give twenty-five drops of the Thebaic tincture, in an ounce of the spirit of cinnamon water. The last is to be repeated, at due intervals, till the symptoms disappear; that is, the effect of one dose must be known, before another is given; yet sometimes in plethoric bodies, if the strength will permit, it is better to prepare the way by bleeding and purging, or both, for an anodyne.

But if the hysterical colic comes on by fits, the following may be used in the intervals, or when the fit is off: take large doses of the balsam of Peru, that is, twenty, thirty, or forty drops, in a spoonful of the finest and whitest sugar: this may be taken twice or thrice in a day.

HYSTERIC PROTERON, in grammar and rhetoric, a species of the hyperbaton, wherein the proper order of construction is so inverted, as that the part of any sentence which should naturally come first is placed last, as in this of Terence, *Valet & vivit, for Vivit & valet.*

J A C

I Is the ninth letter and third vowel of the English alphabet : it is also a consonant, and accordingly has two forms. When a consonant, it is lengthened downwards thus, *J*, and pronounced not much unlike the soft *G* before *e*, as in *genuine*.

The letter *I* was derived from the old Hebrew *Jod*, and is founded by throwing the breath suddenly against the palate with a small hollowing of the tongue, and the same opening of the lips and teeth nearly as in pronouncing *A* and *E*.

The English and French have two kinds of *J* consonant ; the first has a snuffling kind of sound, and serves to modify that of the following vowels, as in *Jew*, *jolly*, &c. The latter is pronounced like the Hebrew *Jod*, which is founded as the consonant *y*, as we find it still among the Germans, &c. Of this we have some instances in words which are indifferently written with a *y* or *i* before a vowel, as *voiage*, *voyage*, &c.

J, in abbreviations and cyphers, stands for *Jesus*.

The Greek *Iota*, and the Hebrew *Jod*, stand but for ten.

JACK, in mechanics, a portable machine for raising great weights.

Kitchen JACK, a compound engine, where the weight is the power applied to overcome the friction of the parts, and the weight with which the spit is charged ; and a steady and uniform motion is obtained by means of the fly. See *Smock-Jack*.

JACK-DAW, in ornithology, a species of *corvus*, with a black and grey head, a brownish black body, and the wings and tail black.

It is one of the smallest of the crow-kind, but an erect and well shaped bird.

JACKALL, in zoology, an animal of the dog kind, with a slender snout.

It is a beautiful creature, and so much resembles a dog, as to be mistaken at first sight for some mongrel breed of that animal.

Its size is that of a small hound ; and, the East, where it is a native, there

J A G

are vast packs of them, often more than two hundred in a company, which hunt animals they would never dare to attack single. It is not impossible that lions and other beasts of prey may be alarmed by the cries of these animals in their chace, and fall in and rob them of their prey ; but the general opinion of their attendance on the lion, is fabulous.

JACOBINE, or **JACK**, in ornithology, a very small sort of pigeon, with a range of feathers inverted quite over the hinder part of the head ; bearing some resemblance to a friar's hood, whence the name.

JACOBITES, a term of reproach bestowed on those who, vindicating the doctrines of passive obedience and non-resistance with respect to the arbitrary proceedings of princes, disallow of the late Revolution, and assert the supposed rights, and adhere to the interests of the late abdicated king James and his family.

JACOBITES, in church-history, a sect of christians in Syria and Mesopotamia ; so called either from Jacob, a Syrian, who lived in the reign of the emperor Mauritius ; or from one Jacob a monk, who flourished in the year 550.

JADE-STONE, the name given to a hard greyish-green species of jasper, of which the Turks generally make the handles of the sabres of great people.

* **JAGO (ST.)** the largest and best of all the Cape de Verd Islands. It was discovered the first of May, which being the festival of St. James or Jago, had its name from thence. It is about one hundred and thirty-five miles in length, and thirty in breadth, and is about thirteen miles to the west-ward of the Isle of Mayo. The air is pretty good, except in the rainy season, and then it is dangerous to strangers. It is a very pleasant country, and abounds with all things necessary for the use and delight of man. The south-east end of this island is flat, but almost all the rest is full of mountains, of which Pike Antonio is the highest, and is almost in the middle. There is plenty of water, and the valleys afford good pasture, which

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which feed great numbers of bullocks, and they have horses, asses, mules, deer, goats, hogs, and black-faced long-tailed monkeys, which are very well proportioned. The inhabitants at first were transported Portuguese, who mixing with the negroes on the continent, have produced a kind of tall ill shaped mulattoes. The women have large lips, flat bodies, and are as infamous for their levity as their deformity. But now the mulatto colour is wearing out, and most of the people are become black, and are very ignorant, though they pretend to be Roman Catholics. It is subject to the Portuguese.

JALAP, in botany, a plant, which is perennial, a native of the East-Indies, and cultivated in our gardens. Whether the roots produced here are equivalent in virtue to those which are brought from abroad, has not, Dr. Lewis observes, been yet experienced.

The officinal jalap roots come from the province of Xalapa in New Spain; in thin transverse slices, solid, hard, weighty, of a dark greyish colour on the outside or cortical part, internally of a dark greyish, with several black circular striæ: the hardest, darkest coloured, and those which have the most of these resinous veins, are the best.

This root has scarcely any smell, and very little taste upon the tongue: swallowed, it affects the throat with a slight kind of pungency and heat. Taken in doses of a scruple or half a dram, it proves an effectual, and in general a safe purgative; very rarely occasioning any severe gripes or nausea, which too frequently accompany the other strong cathartics.

Some have prohibited the use of this cathartic to children; apparently on no very good foundation. Young children, from the laxity of their solids, and the soft lubricating quality of their food, generally bear these kinds of medicines better than adults; and adults of a spongy, lax, or weak habit, better than the rigid and robust. Few, if any, of the strong resinous purgatives are in either case more innocent than jalap.

The plants will grow to the height of three or four feet, and spread their branches very wide, especially if the roots have room in the pots; and their flowers will begin to appear in June, and they will continue constantly flowering until the frost prevents them; which, together with the great diversity of colours in the flowers upon the same plant, renders them valu-

J A M

able to every curious person. The flowers of these plants never expand in the daytime, while the sun is hot; but in the evening, when the sun declines, they begin to open, and continue expanded till the sun shines warm upon them the next day; so that, when it happens to be cloudy weather, as also late in autumn, when the weather is cool, the flowers will remain open most part of the day.

As the flowers are produced successively almost every day, so the seeds are in a short time after ripe, and soon fall to the ground; so that, when your seeds begin to ripen, you must carefully look for them upon the ground twice a week: otherwise, if they lie too long upon the ground, and there should fall some rain, they will sprout, and be good for nothing. In sowing these seeds, you should be careful to take them from such plants as produced the greatest variety of flowers; for, if you save them from such as produce only plain coloured flowers, the seeds will always produce the same sort; and those with yellow and red variegated flowers will constantly produce the same; these never varying from the red and yellow to the purple and white, though they will sometimes degenerate into plain yellow or red flowers, as they will into plain purple or white: but they will constantly retain one or both of their original colours.

* **JAMAICA**, an island of America, about fifty-four miles from Cuba, being one hundred and sixty miles long, and fifty-five broad. A ridge of hills runs through the middle of it, nearly east and west, from sea to sea. There are many fine rivers, which have their rise on each side of this mountain, and are of great advantage to the inhabitants. They are well stored with fish of various kinds, which, though not like the European, are altogether as delicious. The mountains, and indeed the greatest part of the island, are covered with woods, which are green all the year; for here is an eternal spring. The trees are mixed together in a gay confusion, forming groves and cool retreats. The valleys likewise are always clothed with a summer livery, producing the richest plants in the universe. They have likewise the finest orange and lemon trees in the greatest plenty, and the star-apple, the guava, the citron, and the mamee, grow by the way-sides. But to balance these advantages, they have dreadful alligators in the rivers, the guana and the galliwase in the marshes, and numberless

snakes and noxious animals in the mountains.

The longest day is near thirteen hours in length, and about nine in the morning it is intolerably hot; till the sea breeze begins to blow, which is soon after. The people here give this the name of the doctor, because it keeps the people in health. Sometimes the nights are pretty cool, because there is little or no twilight. Every night there is a piercing dew, which is very unwholesome, especially to new-comers. They, like all other parts of the torrid zone, have only two seasons, the wet and dry: however, about the Blue Mountain Valley, and several hilly places, they have rains every day, more or less, the whole year round. On the north-side the seasons are pretty regular, and they begin to plant till August, and continue till Christmas, all which time they are sure to have rain. They have none after that till the end of the month, when it begins again, and continues all April and May. The plantations on the south side have no such regular seasons, which have obliged some to move their sugar-works to other places; for it has been dry in those parts for almost nine months together, and at Port Royal there are scarcely forty showers in a year, which they suppose is occasioned by cutting down the woods. July, August, and September, are called the hurricane months, which generally happen in that time. It lightens almost every night, but without thunder, unless sometimes, which is then very terrible, and astonishingly loud. The time of earthquakes is in February or March. There is not above one part in three of the whole island inhabited, because all the plantations are near the sea, and even there not one-half of the ground is cleared from wood. The soil in some places is exceedingly fruitful. There are only three towns of any note, which are Port-Royal, Kingston, and Spanish Town, many of those built by the Spaniards being now in ruins. The whole island is divided into nineteen parishes or precincts. The servants are allowed no fresh provisions, but feed on Irish salt-beef. The men commonly wear thread stockings, linen drawers and waistcoats, with a handkerchief round their heads, and a hat above it. The negroes go mostly naked, except a pair of breeches. The ladies dress as well and as gay as in most other places, and the servant maids have a linnen gown and plain head-cloths. The

current coin is Spanish, and the lowest piece is a royal or bit, for they have no copper money; which is no wonder, for every thing is excessively dear. The treatment of the slaves here is very barbarous, and they are often punished with a cruel death for trifles. The common distempers here are fevers and belly-achs, the former of which will sometimes carry off the patient in a few hours. No sorts of European grain will grow here, but Indian corn, Guinea corn, pease of various kinds, but none like those of Europe.

JAMAICA-PEPPER, *Pimenta*, or *Pimenta*, in the materia medica.

JAMAICA-WOOD, a name sometimes given to brazil.

JAMB, or **JAUMB**, among carpenters; an appellation given to door-posts, as also to the upright posts at the sides of window-frames; and among bricklayers, it denotes the upright sides of chimnies, from the hearth to the mantle-tree.

IAMBIC VERSES, verses in the Greek and Latin poetry, which are so called, as they wholly, or, for the most part, consist of an iambus or iambic foot.

IAMBUS, in ancient poetry, a simple foot consisting of a short and a long syllable, as *pios*.

* **JAMES VI.** king of Scotland, and I. of England, son of Henry Stuart and Mary queen of Scotland, was born in 1566, and was raised to the throne of England, in 1603, after the death of queen Elizabeth, who had nominated him for her successor, as being her nearest relation; for he was descended from the eldest son of Henry VII. He united Scotland to England, and took the title of king of Great-Britain. In 1604 he ordered all popish priests to leave England, on pain of death. In 1605, he discovered the famous powder-plot, and several of the conspirators were executed. In 1606, he caused to be drawn up the oath of allegiance; and, in 1621, summoned a parliament, in which were formed the two parties called Whigs and Tories. He suffered the Dutch to take Amboyna, and to massacre the English inhabitants, without shewing his resentment. He not only suffered the nation to fall into contempt, but put to death the brave Sir Walter Raleigh for his successful expeditions against the Spaniards. He was educated by the famous Buchanan, and prided himself for his skill in Latin and school-divinity, though the works he published

lished prove that he was but an indifferent writer. These works principally consist of several tracts which are printed in one volume, in folio, and contain An Attempt to prove that Monarchs have a Right to be absolute, and independent on their subjects; On the heinous Sin of taking Tobacco; On Witchcraft, &c. Mr. Walpole observes, "that there is not the least suspicion, that the folio under the name of James I. is not of his own composition; for though Roger Ascham, says he, may have corrected or assisted periods of his illustrious pupil, no body can imagine, that Buchanan dictated a word of the *Demonologia*, or of the polite treatise, intitled a Counterblast to Tobacco. Quotations, puns, scripture, witticisms, superstition, oaths, vanity, prerogative, and pedantry, the ingredients of all his sacred majesty's performances, were the pure produce of his own capacity, and deserving all the incense offered to such immense erudition by the divines of his age, and the flatterers of his court." He died on the 8th of April, 1625, aged fifty-five, after having reigned twenty-two years in England, and was succeeded by his son Charles I.

* JAMES II. was the second son of Charles I. king of Great Britain, and Henrietta, the daughter of Henry IV. king of France, and was born at London, the 14th of October, 1633, and had the title of duke of York. After the taking of Oxford, in 1646, the parliament committed him to the care of the earl of Northumberland, but he made his escape, dressed like a girl, and flying into Holland, sought protection from his sister the princess of Orange. He afterwards went into France, served under the viscount de Turenne, and gave proofs of a courage worthy of his birth. He also distinguished himself, in 1655, in the Spanish army under Don Juan of Austria. In 1660, he returned to England with his eldest brother, king Charles II. was made lord high-admiral of the kingdom, and beat the Dutch fleets in 1665 and in 1672; but, as he openly professed his adherence to the popish religion, and prevailed upon his brother to take several arbitrary and unpopular measures, the parliament attempted to exclude him from the succession; but Charles II. dying on the 6th of February, 1685, the duke of York was proclaimed king the same day, under the title of James II. and a short time after

in Scotland, under that of James VII. On his accession, he made a speech to the privy council, promising to preserve the government both of the church and state; yet two days after went publicly to mass. On the 11th of June, the duke of Monmouth, natural son of king Charles II. landed at Lyme, in Dorsetshire, with only eighty-three followers; and immediately published a declaration, that his sole motive for taking arms was to preserve the protestant religion, and to deliver the nation from the usurpation and tyranny of James, duke of York; and that his mother was actually married to king Charles II. He thus raised an army in the west of England; but, being defeated and taken prisoner, was beheaded on Tower-hill, the 15th of July, 1685. Those who had espoused his cause were now butchered by military execution, under general Kirk, or barbarously executed, by form of law, under judge Jeffreys, who caused about six hundred persons to be hanged, and the steeples, town-gates, and roads were stuck with the heads and limbs of those who had adhered to the duke. James II. shewed great zeal for restoring the popish religion in England, and in 1687, published a proclamation, granting liberty of conscience, by which he gave great pleasure to the dissenters, who had been severely persecuted under the preceding reigns; but, on its being discovered that this was an artifice intended to favour the popish party, who were soon put into places of honour and profit; they joined with those of the established church in opposing it. The popish priests now appearing publicly in their habits in the streets, and a nuncio arriving from Rome, the whole nation were alarmed, and applied to William Henry of Nassau, prince of Orange, who had married Mary, king James's eldest daughter, and was himself the son of that king's eldest sister. This prince arrived in England, in 1688, when the dissatisfaction against the king was so great, that a considerable part of his army forsook him, and without venturing an engagement, king James privately retired to France, on which the prince of Orange was crowned king of England, by the name of William III. Thus was formed the famous period in English history called the Revolution. In 1689, James II. landed with an army in Ireland, in order to render himself master of that kingdom; but having lost the battle of the Boyne, in which king William com-

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manded in person, he was obliged to return to France, where he resided at St. Germaines, and died there, on the 16th of September, 1701, aged sixty-eight. He was buried in the church of the monastery of the Benediictines, in Paris. James II. wrote Memoirs of his own Life and Campaigns to the Restoration. Memoirs of the English Affairs, chiefly naval; from the year 1660 to 1673.

JAMES, or *Knights of St. JAMES*, a military order in Spain, first instituted about 1170, by Ferdinand II. king of Leon and Galicia. The greatest dignity belonging to this order is grand master, which has been united to the crown of Spain. The knights are obliged to make proof of their descent from families that have been noble for four generations, on both sides: they must also make it appear that their said ancestors have neither been Jews, Saracens, nor heretics; nor have ever been called into question by the inquisition. The novices are obliged to serve six months in the galleys, and to live a month in a monastery; they observe the rule of St. Austin, making no vows but of poverty, obedience, and conjugal fidelity.

St. JAMES's DAY, a festival of the Christian church observed on the 25th of July, in memory of St. James the Greater, son of Zebedee.

Epistle of St. JAMES, a canonical book of the New Testament, being the first of the catholic or general epistles; which are so called, as not being written to one but to several Christian churches. This general epistle is addressed partly to the believing and partly to the infidel Jews; and is designed to correct the errors, soften the unguarded zeal, and reform the indecent behaviour of the latter; and to comfort the former under the great hardships they then did, or shortly were to suffer, for the sake of Christianity.

* **JANE SEYMOUR**, the wife of Henry VIII. was descended from an ancient family, and was the eldest daughter of sir John Seymour, of Wolf-hall, in Wiltshire, constable of Bristol castle; and groom of the chamber to king Henry VIII. whom he served in his wars in France and Flanders. Jane was maid of honour to queen Anne Boleyn, when the king became enamoured with her, in the year 1536. She had then all the charms of youth and beauty, and her humour was tempered between the severe gravity of queen Catharine and the gay pleasantness of queen Anne. This new passion was not improbably the cause of the extreme jea-

lously which he soon after conceived against his queen, whose enemies finding that she no longer held that place in his heart which she had formerly enjoyed, instead of fearing to accuse her of unfaithfulness to the king, thought to please him who began to be himself unfaithful. The queen being therefore condemned for adultery, and executed the 19th of May, 1536, the king shewed so little regard to the public opinion, or his own reputation, that, the day following; or, as others say, three days after, he solemnized his marriage with Jane Seymour. The new queen, at the ceremony of her marriage, made a most beautiful appearance; and the parliament meeting on the 8th of June following, an act was passed to settle the crown, after the king's death, on such of the issue of queen Jane, either male or female, or of any other queen whom he might afterwards marry, as he should appoint in his last will. But this act was repealed in the first year of the reign of queen Mary. On the 12th of October, 1537, queen Jane was delivered of a prince at Hampton-court, who was baptized by the name of Edward, and was afterwards king under the name of Edward VI. but the joy for his birth was abated by the death of the queen, who died on the 14th of that month. Some writers have asserted, that the queen not being able to be delivered of the prince, the king ordered her belly to be opened; saying, that he could find another wife, but was not sure to find another son; but this account has no foundation in truth, the prince being born in the ordinary way, and the queen died two days after, of a disorder incident to women in her condition.

JANIZARIES, an order of the Turkish infantry, reputed the grand signior's guards, and the main strength of the Ottoman army.

JANSENISTS, in church-history, a sect of the Roman-catholics in France, who follow the opinions of Jansenus, bishop of Ypres, and doctor of divinity of the universities of Louvain and Douay, in relation to grace and predestination.

JANUARY, the first month in the year, according to the present computation. It was introduced by Numa into the calendar, and placed at the winter solstice, where March was before, which Romulus had placed at the vernal equinox. The word is derived from Jannus, to whom the Romans on the first of this month offered solemn sacrifices.

* **JANUS**,

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* JANUS, in pagan worship, the first king of Italy, who, it is said, received Saturn into his dominions, after his being driven from Arcadia by Jupiter. He tempered the manners of his subjects, and taught them civility, and from him they learned to improve the vine, to sow corn, and to make bread. After his death, he was adored as a god. Romulus caused a temple to be erected to him, the gates of which were open in time of war, and shut in time of peace. This deity was thought to preside over all new undertakings. Hence, in all sacrifices, the first libations of wine and wheat were offered to Janus, and all prayers prefaced with a short address to him. At his festival, the Romans offered cakes of new meal and salt, with new wine and frankincense. Janus was represented with two faces, either to denote his prudence, or that he views at once the past and approaching years; he had a scepter in his right hand and a key in his left, to signify his extensive authority, and his invention of locks.

* JAPAN, certain islands, the principal of which is called Nippon, which gives its name to all the rest, and is about six hundred miles in length, and one hundred and fifty in breadth. The chief town of which is Jeddo. There are a great many lesser islands, all subject to Japan, whose king or emperor is said to have fifty or sixty petty princes under him. It was discovered by the Portuguese in 1542, being driven upon the coast by a tempest. All the country, particularly towards the north, is very cold in the winter, that is, in December, January, and February, in which months there falls a great deal of snow. However, it is an agreeable country, with a very fertile soil, almost always green. There are mountains of a very great height, with volcanos which vomit both fire and flames, as also a great many mines of silver and other metals. There are many fine cities, towns, and fortresses. The emperor keeps his court at Jeddo, and is said to surpass all other monarchs of the world in magnificence. The inhabitants are subtle, ambitious, patient in adversity, and civil in their behaviour; but the criminals undergo the most cruel torments. In their dress they greatly resemble the Chinese, whose characters they understand, though they do not speak the same language. They have little or no beard, and their hair and teeth are black. When they walk abroad, they have large fans in their hands, and cover their heads from

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the sun with umbrellas. But the heads of the common people are bare in all sorts of weather. The habits of the women are much like those of the men, and are made of rich stuffs of diverse colours, which reach to the ground. Most of their buildings are of wood, and are well contrived. The houses or huts of poor people are made of the branches of trees, mixed with reeds, and covered with clay. The houses in general are low, and the roof extends some feet beyond the walls, under which there are agreeable galleries on the back side. The nobility have buildings which are large in extent, but not in height, and the rooms are embellished with beautiful ornaments and fine paintings. The worst is, that these houses are apt to take fire, inasmuch, that on April 2, 1657, the large city of Jeddo was consumed thereby, and above one hundred thousand houses were burned to the ground. They furnish their houses with handsome mats, with which they cover the floors, and have mattresses upon which they sit cross-legged, and lie upon them in the night. They feed themselves like the Chinese, with two little sticks, without touching their viands with their fingers. They have no wine made of grapes, instead of which they drink arrack, drawn from rice, but their common drink is tea. They have likewise a kind of ale or beer made of wheat, which is very strong.

Their arms are guns, pikes, bows, arrows, and sabres, of which last they have generally two at their girdles, one short, and the other long. They are very fond of diversions, shows, sports, and music; and as for their religion, the head of it is called daio; they are Pagans, but are divided into several sects, each of which have their priests and pagods, with idols in terrible strange kind of shapes.

The goods which the Dutch carry to Japan are, spices, sugars, silks, woollen and linen cloth, elephants teeth, and haberdashery wares. For which they receive in return, gold, silver, fine copper, cabinets, and other japanned and lacquered wares. Their porcelaine exceeds that of China, and is the finest in the world. These islands are placed between one hundred and thirty and one hundred and forty-four degrees of east longitude, and between thirty-one and forty degrees of north latitude.

JAPAN EARTH, in the materia medica. See *Terra Japonica*.

JAPAN-

JAPANNING, the art of varnishing and drawing figures on wood, in the same manner as is done by the natives of Japan in the East-Indies. The substances which admit of being japanned are almost every kind that are dry and rigid, or not too flexible: as wood, metals, leather, and paper prepared.

Wood and metals do not require any other preparation, but to have their surface perfectly even and clean; but leather should be securely strained either on frames, or on boards; as its bending or forming folds would otherwise crack and force off the coats of varnish; and paper should be treated in the same manner; and have a previous strong coat of some kind of size; but it is rarely made the subject of japanning till it is converted into papier mache, or wrought by other means into such form, that its original state, particularly with respect to flexibility, is lost. One principal variation from the method formerly used in japanning is, the using or omitting any priming or under-coat on the work to be japanned. In the older practice, such priming was always used; and is at present retained in the French manner of japanning coaches and snuff-boxes of the papier mache: but in the Birmingham manufacture here, it has been always rejected. The advantage of using such priming or undercoat is, that it makes a saving in the quantity of varnish used; because the matter of which the priming is composed fills up the inequalities of the body to be varnished; and makes it easy, by means of rubbing and water-polishing, to gain an even surface for the varnish: and this was therefore such a convenience in the case of wood, as the giving a hardness and firmness to the ground was also in the case of leather, that it became an established method; and is therefore retained even in the instance of the papier mache, by the French, who applied the received method of japanning to that kind of work on its introduction. There is nevertheless this inconvenience always attending the use of an undercoat of size, that the japan coats of varnish and colour will be constantly liable to be cracked and peeled off, by any violence, and will not endure near so long as the bodies japanned in the same manner, but without any such priming; as may be easily observed in comparing the wear of the Paris and Birmingham snuff-boxes; which latter, when good of their kind, never peel or crack, or suffer any damage, unless by great violence,

and such a continual rubbing, as wastes away the substance of the varnish; while the japan coats of the Parisian crack and fly off in flakes, whenever any knock or fall, particularly near the edges, exposes them to be injured. But the Birmingham manufacturers, who originally practised the japanning only on metals, to which the reason above given for the use of priming did not extend, and who took up this art of themselves as an invention, of course omitted at first the use of any such undercoat; and not finding it more necessary in the instance of papier mache, than on metals, continue still to reject it. On which account the boxes of their manufacture are, with regard to the wear, greatly better than the French. The laying on the colours in gum-water, instead of varnish, is also another variation from the method of japanning formerly practised: but the much greater strength of the work, where they are laid on in varnish or oil, has occasioned this way to be exploded with the greatest reason in all regular manufactures: however, they who may practise japanning on cabinets, or other such pieces as are not exposed to much wear and violence, for their amusement only, and consequently may not find it worth their while to encumber themselves with the preparations necessary for the other methods, may paint with water colours on an undercoat laid on the wood, or other substance of which the piece to be japanned is formed; and then finish with the proper coats of varnish, according to the methods below taught: and if the colours are tempered with the strongest isinglass size and honey, instead of gum-water, and laid on very flat and even, the work will not be much inferior in appearance to that done by the other method; and will last as long as the old japan.

JASMINUM, the jasmine, or jessamine tree, in botany, a genus of plants. The common white jasmine is easily propagated, by laying down the tender branches in the spring, which, by the succeeding spring, will be rooted strong enough to be transplanted. They may also be raised by cuttings, which should be planted in autumn in a moist border, where they may have the morning sun: but they must be screened from the violence of the sun in the heat of the day, and frequently watered in dry weather. The cuttings, thus managed, will many of them live, and have roots fit to be removed in the following spring: but this method is seldom practised, the layers
always

always making the best plants. The two striped sorts should be planted in a warm situation, especially the white striped; for they are much more tender than the plain, and are very subject to be destroyed by great frosts, if they are exposed thereto: it will therefore be proper to preserve a plant of each kind in pots, which may be removed into the green-house in winter, lest, by exposing them to the cold, they should all be destroyed, and the variety lost.

* JASON, in fabulous history, the son of Æson, king of Thessaly, was left under the guardianship of his uncle Pelias, who seeking to destroy him, he was conveyed to a cave, where Chiron instructed him in physic. Arriving at years of discretion, he returned to his uncle, who inspired him with the design of sailing to Colchis, to obtain the golden fleece. Jason departed with above fifty of the most distinguished youths of Greece, in a vessel named Argo, from Argos its builder, which gave the name Argonauts to those engaged in this expedition. Jason obtained the golden fleece by the assistance of Medea, who had conceived a violent passion for him, and who, by her enchantments, laid the dragon asleep, and taught him to subdue the brazen-footed bulls, and afterwards he married that sorceress, but at length quitted her and married Creusa.

JASPER, in natural history, a genus of scrupi, of a complex irregular structure, of great variety of colours, and emulating the appearance of the finer marbles, or semipellucid gems.

The great characteristic of jaspers is, that they all readily strike fire with steel, and make not the least effervescence with aqua-fortis.

Jaspers, though commonly reckoned among the precious stones, ought undoubtedly to be ranged among the scrupi; being only opaque crystalline masses, variously debased with an earthy admixture: and to this last ingredient it is that they owe all their variety of colours, as white, green, red, brown, and bluish.

The several kinds of nephritic stone, and the lapis divinus or jade, are all genuine jaspers; but the hard, bright, green jasper, of the East-Indies, seem to be the true medicinal kind. It is found in masses of various sizes and shapes, but the more usual standard as to size, is between four and six inches in diameter; but there are masses of it found of a foot or more in diameter, and others no larger than a horse

bean. It is generally simple and unmixed; but if it be variegated at all, it is always with white, and this is disposed not in streaks or veins, but in clouds. It is capable of a very fine polish, and when the white clouds are well disposed, is very beautiful, and in pieces not too thick, is tolerably pellucid, when held up against the light.

JASPI-CAMEA, in natural history, the dull, broad-zoned green and white camea; being a very elegant species much resembling the common camea in all things but colour.

JASPONYX, in natural history, the purest horn-coloured onyx, with beautiful green zones, which are composed of the genuine matter of the finest jaspers.

JAVELIN, *Hæba*, in antiquity, a sort of spear, five feet and a half long; the shaft of which was of wood, with a steel point. Every soldier, in the Roman armies, had seven of these, which were very light and slender.

JAUNDICE, in medicine, a disease arising from a vitiated state of the blood and humours, by means of an excrementitious bile, from a fault of the bilious ducts, greatly injuring the functions of the whole body, and rendering the skin of a yellow or livid colour. The bile is a kind of natural sapo, that is, a mixture of oil, water, and salt, both volatile and fixed, separated from the blood in the liver for various uses of the animal body; and as the blood itself may be vitiated many ways, it is no wonder that this humour is sometimes rendered unfit for its offices. Now it is often faulty by its lentor or visciditv, and sometimes also for its excessive thinness. In the first case the secretory glands of the bile are obstructed, and the small quantity of it that is ferrated, stagnates in the hepatic ducts; whence the liver grows hard, and under its tunicle are formed whitish concretions, resembling hard soap. But this disease arises, not only from the visciditv of the bile, whereby it stops in its passage, but also from its want of due consistence: for here the volatile salt, which is one of the compounding principles of the bile, over-bounds; whence the bile becomes too thin, hot, and irritating to the intestines. In the former case the body is too costive, and the feces are hard, and a clay colour: in the latter a diarrhœa, attended by a fever and thin yellow stools, constantly teazes the patient. Persons who spend their lives in a sedentary manner, without proper exercise, are most

liable to the former; because the oily part of the bile grows too thick and viscid, for want of a due proportion of salt: and those who render their faculties useless, by too high feeding and drinking spirituous liquors, are generally most exposed to the latter. But there is another species of jaundice, owing to a very different cause from those above described; and that is nervous spasms, when the subtil elastic fluid of the nerves, by becoming too acrid and irritating, constricts the biliary ducts to the degree of hindering its passage through the liver; and consequently it must remain in the blood, and thence be thrown on the different parts of the body. I must also observe, that there sometimes happens another kind of constriction, occasioned by the scirrhus of the abdominal glands; in which case, though the liver and gall bladder be loaded with bile, yet no part of it can pass into the intestines; of which I formerly saw a remarkable instance in the hospital.

A disease attended with such variety of circumstances, requires different methods of cure. In case of costiveness with ash-coloured or whitish stools, saponaceous medicines, both alone and joined with rhubarb, are necessary. When the belly is too loose, the looseness is rather to be moderated than stopped; which is best done by rhubarb with the admixture of an anodyne. But purgatives are never more proper in this disease than in those cases, which we have said to be owing to a constriction of the biliary ducts by nervous spasms: but in every kind of jaundice, attended with actual inflammation, blood is to be drawn; and, generally speaking, a vomit is to be given. This inflammation frequently suppurates and turns to a vomica; from which, if pure white matter issues, it is a promising sign, because the evil lies in the tunicle or outward membrane. But if the whole substance of the liver is consumed with it, the patient labours under a slow fever and great anxiety for a good while, and then dies.

Lastly, for correcting the bile itself nothing is more useful than the following draught. Take of lemon juice six drams; of salt wormwood half a dram; of simple cinnamon-water one ounce; of double refined sugar one scruple: mix. And it will be of service likewise, in case of a looseness, if its irritating quality be duly checked by opiates. Upon the same principle, Mynsicht's elixir of vitriol, taken in Bath or Spaw water, is a very good medicine.

Mead's Monita & Præcepta.

JAW, *Maxilla*, in anatomy. See *Maxilla*.

IBERIS, *sciatica-cress*, in botany, a genus of plants.

IBEX, in zoology, an animal of the goat-kind, with extremely long nodose horns, which bend backwards, and are of a blackish colour, and annulated on the surface. The body is of a dark dusky colour, and is less in proportion to the height than that of the common goat: it has a great resemblance to the deer-kind; the legs are also perfectly like those of the deer, straight, elegant, and slender. It is frequent in many parts of Europe, and notwithstanding its vast horns, runs and leaps with surprising force and agility.

IBIS, a bird which was very useful to the Egyptians for destroying serpents, locusts and caterpillars; and, on that account, had divine honours paid it. It is all over black, and about the size of the curlew, with the head of a cormorant, and the long neck of a heron.

* ICARUS, in fabulous history, was the son of Dædalus, who being kept in prison by Minos, in the Isle of Crete, his father invented waxen wings for them both, and having taught Icarus how to use them, advised him not to fly too high; however, the youth slighted his advice, and approaching too near the sun, his wings melted, and he fell into the sea, which, from his name, was called the Icarian Sea.

ICE, *Glacies*, in physiology, a solid, transparent, and brittle body, formed of some fluid, particularly water, by means of cold.

ICE-HOUSE, a building contrived to preserve ice for the use of a family in the summer season. Ice-houses are more generally used in warm countries, than with us, particularly in Italy, where the meanest person, who rents a house, has his vault or cellar for ice.

* ICELAND, an island in the north of Europe, subject to the king of Denmark, about three hundred miles in length, and one hundred and fifty in breadth. Here the sun for two months in the year never sets, and about the middle of the winter solstice never rises quite above the horizon. This island is full of mountains, which are stony and barren; but in the valleys there are excellent pastures, and the grass yields a very grateful smell. The ice, which begins to break in the month of May from the lands near the pole, brings with it a large quantity of wood and animals, such as foxes, wolves, and bears. The natives

natives live in little huts covered with skins, or barks of trees, and are a strong hardy race, who cloath themselves with the skins of beasts. They have horses, cows, and other cattle, as also several hot mineral waters, which are very salutary; and they have many rivers and lakes full of fish, besides those they have on the coasts, among which there are whales. There are here several volcanos. The inhabitants have no sort of money, but only barter one commodity for another. The soil is chiefly clay, and in some places sandy. They have many sorts of birds in summer, and in winter wild ducks, ravens, and swans. The horses and sheep in winter live upon the grass, which is under the snow, and which they scrape away, as also upon sea moss. In the year 1263, the kings of Norway became masters of this island, and afterwards it came to the Danes, along with Norway. The king of Denmark has a viceroy here, and their present religion is the Lutheran, among those who live near the shore, but as for such as live at a distance from the settlements, they are still Pagans. Many of them live above a hundred years, without the help of physicians or medicines. The Danes have here and there a settlement on the coast, and the only towns, or rather villages, are Hole and Schaikold. It is seated five hundred miles west of the coast of Norway, and almost as far north-east of Scotland, in between sixty-four and sixty-seven degrees of north latitude.

ICH DIEN, the motto of the prince of Wales's arms, signifying, in the High Dutch, I serve.

ICHNEUMON, in zoology, the name of an animal, of which there have been a multitude of idle and fabulous things asserted. It is a creature of the weasel kind, with a longer, and narrower body than a cat, and something approaching both in shape and colour to the badger. Its nose is black and sharp, like that of a ferret. It has no beard, or whiskers; its nose is prominent, and its ears short and round. Its colour is a yellowish grey, much like that of some of the monkey class. This is its appearance when in a good humour; but, when frightened or provoked, it raises its hairs upright, and shews them variegated at intervals with grey and yellow in distinct portions. Its legs are short, and its feet have all five toes. Its tail is very long, and thick at the insertion; its teeth, and its tongue, like those of the cat: and, what is very singular, is, that in both

sexes it has a large aperture situated below the anus, which it dilates and contracts at pleasure. Hence came the old opinion, that both male and female conceived, and brought forth young, in this animal. It is naturally a very cleanly animal, and is very brisk and nimble, and of great courage. It will engage a large dog; and if it have a quarrel with a cat, will destroy that creature by three bites on the throat. Its nose is so sharp and narrow, that it can very hardly lay hold of any thing large with his teeth, and scarce can bite a man's clenched fist. It is very expert in seizing its prey; it stands erect on its hinder-legs, to descry where it is; then, throwing itself flat on its belly, crawls very slowly towards it, and when within reach darts violently upon it. It feeds indifferently on all animals that it can get at. Its common food are the snail, the lizard, the chameleon, such serpents as it can manage, and frogs and mice; it is also very fond of birds, and of none so much as the hen and chicken.

ICHNEUMON is also the name of a genus of flies, of the hymenoptera order, with a triple sting at the anus.

ICHNOGRAPHY, in perspective, the view of any thing cut off by a plane parallel to the horizon, just at the base of it. Among painters it signifies a description of images, or of ancient statues of marble and copper, of busts and semi-busts; of paintings in fresco, Mosaic works, and ancient pieces of miniature.

ICHNOGRAPHY, in architecture, a description or draught of the platform or ground-work of a house, or other building. Or it is the geometrical plan or platform of an edifice or house, or the ground-work of an house or building, delineated upon paper, describing the form of the several apartments, rooms, windows, chimnies, &c. See *Building*.

ICHNOGRAPHY, in fortification, denotes the plan or representation of the length and breadth of a fortress, the distinct parts of which are marked out, either on the ground itself, or on paper.

ICHOGANS, the grand signior's pages, serving in the seraglio.

ICHOR properly signifies a thin watery humour, like serum; but is sometimes also used for a thicker kind, flowing from ulcers, called likewise sanies.

ICHTHYOCOLLA, vulgarly called isinglass, a solid glutinous substance, prepared from a fish of the sturgeon kind caught in the rivers of Russia and Hungary.

gary. The skin, fins, &c. are boiled in water, the decoction inspissated to a due consistence, and then poured out so as to form thin cakes ; which are either excicated in that form, or cut while soft into slices, and rolled up into spiral, horse-shoe, and other shapes. The best is thin, clear, and almost transparent pieces.

Ichthyocolla is one of the purest and finest of the animal glues, of no particular smell or taste. Beaten into shreds, it dissolves pretty readily in boiling water or milk, and forms a gelatinous substance, which yields a mild nutriment, and proves useful medicinally in some disorders arising from a sharpness and colliquation of the humours. A solution of it in water, curiously spread, whilst hot, upon silk, affords an elegant sticking plaster for slight injuries of the skin, not easily separable from the part by water, and scarcely inferior to the more compounded one, sold under the name of the ladies black plaster, in which different balsams and resins are joined to the ichthyocolla.

ICHTHYOLOGY, the science of fishes, or that branch of zoology which treats of fishes.

ICHTHYOLOGIST, an author who has written professedly of fishes.

ICONOCLASTS, in church history, an appellation given to those persons, who in the eighth century, opposed image worship ; and it is still given by the church of Rome, to all Christians who reject the use of images in religious matter.

ICOSAHEDRON, a regular solid, terminated by twenty equilateral and equal triangulars.

It may be considered as consisting of twenty triangular pyramids, whose vertices meet in the center of a sphere that circumscribes them, and therefore have their heights and bases equal ; wherefore the solidity of one of these pyramids multiplied by twenty, the number of bases, gives the solid content of the icosaehedron.

ICOSANDRIA, in the Linnæan system of botany, a class of plants.

The term icosandria is here taken in a lax and indeterminate sense, so as to comprehend all plants with more than twelve stamens, and for the most part not much exceeding twenty : however, the characteristic of the class is rather to be taken from the manner of insertion, than number of the stamens.

To this class belong the cactus or torch-thistle, the amygdalus or almond-tree, the cerasus, or cherry, &c.

IDEA, the representation or resemblance of something, even though not seen, as conceived by the mind.

Mr. Locke has made it appear that all our ideas are owing to our senses, and the reflection of our minds upon those ideas which the senses have at first furnished us with ; and that the distinction of the Cartesians is mere chimera. See *Locke's Essay on the Human Understanding*.

So that a person destitute of one sense would have no idea belonging to that sense ; and if destitute of all the senses, he would have no idea at all, not even of reflection, as wanting all sensation that should excite in him the operations of his mind, which are the objects of his reflection. Thus far the mind is altogether passive.

Ideas only seem to be innate, because we find we have them, as soon as we come to the use of reason, being in effect what we formed from the ideas where-with the mind was insensibly filled by the senses.

Ideas are divided into simple and complex.

Simple IDEAS comprize all those which come into the mind by sensation ; some of which we acquire purely by means of one sense ; others by several senses : there are other simple ideas formed in the mind both by sensation and reflection jointly. Of some of these kinds of ideas all our knowledge consists.

We should distinguish between simple ideas, as they are perceptions of the mind, and as they are modifications of the bodies that cause such perceptions, that we may not think they are exactly the images of something inherent in the object ; for most of those of sensation are in the mind no more the likeness of any thing existing without us, than the names that stand for them are the likeness of the ideas.

But here the qualities of the bodies which produce these ideas in us are to be distinguished into primary and secondary : the former are such as are utterly inseparable from the body, in whatever state it be, and such as our senses constantly find in every particle of matter, as solidity, extension, &c. Secondary qualities are such as are only powers in the objects to produce various sensations in us by means of their primary ones, as the figure, bulk, &c. of their particles, as colour, taste, &c.

Now the ideas of primary qualities are in some sense resemblances of them ; but those produced in us by the secondary quali-

qualities have no resemblance of them at all, being only a power to produce those sensations in us.

The mind has several faculties of managing these simple ideas; as, 1. That of distinguishing rightly between one and another, wherein consists the accuracy of judgment. 2. That of comparing them one with another, as to extent, time, place, or any other circumstances of relation. 3. That of putting together the simple ideas of sensation and reflection; in order to form complex ones. 4. Children, having got some ideas; by degrees learn the use of signs: hence the use of words being to stand as outward marks of our internal ideas, if every particular idea that we take in, should have a particular name affixed to it, names would grow endless. To prevent this, the mind has another faculty, whereby it can make the particular ideas received from such objects become general; which is done by considering them as they are appearances in the mind separate from all other existences, and circumstances of existence, &c. and this is called abstraction. Thus the same colour being observed to day in chalk, which we observed yesterday in paper; we, considering that appearance alone, make it a representation of all of the same kind, and call it whiteness.

From these four powers all our complex ideas are formed: and as before the understanding was passive, so here it is active.

Complex IDEAS may be reduced to these three heads, namely, modes, substances, and relations: modes are such complex ideas as are not supposed to exist by themselves, but are considered as dependencies on substances, as triangle, gratitude, &c. Of these there are two kinds; 1. Such as are only variations of the same simple idea, as ten, a score, &c. 2. Such as are compounded of simple ideas of several sorts put together, to make a complex one, as beauty, theft, &c.

Substances have their ideas from such combinations of simple ideas as represent distinct things subsisting by themselves; in which the idea of substance, confused as it is, is always the first. Relations are complex ideas arising from the comparison of one idea with another. Of these some only depend on the equality or excess of the same simple idea in several subjects, and these may be called proportionable relations, such as equal, more, &c. Ano-

ther occasion of comparing things is owing to the circumstances of their original; which, not being afterwards to be altered, make the relations depending thereon as lasting as the subjects to which they belong; as father, mother, &c. as also in the relations by institution, as prince and people, &c. and as to moral relations, they are the conformity or disconformity of men's free actions to laws and rules, whether human or divine.

Ideas may also be divided into clear or distinct, and obscure or confused.

Simple ideas are clear, when they continue such as the objects represent them; when our organs of sensation are in a good tone, our memories retain them, and can present them to the mind; whenever it has occasion to consider them; and when the mind also sees that those simple ideas are severally different one from another. The contrary to which is, what we call obscurity and confusion of ideas.

Again ideas, with regard to their objects, are distinguished into real or fantastical, true or false, adequate or inadequate.

Real IDEAS are such as have a foundation in nature; being conformable to that being to which they are referred as their archetypes.

Fantastical IDEAS, such as have no foundation in nature.

True and False IDEAS.—When the mind refers its ideas to any thing extraneous to it, in such a reference, the mind makes a tacit supposition of their conformity to that thing; which supposition, as it is true or false, so the ideas themselves come to be denominated. Real ideas are divided into adequate and inadequate; adequate ideas are those which perfectly represent those archetypes which the mind supposes them taken from, and which it makes them stand for; inadequate are such as do but partially represent those archetypes.

IDENTITY, or *SAMENESS*, denotes that by which a thing itself, and not any thing else; in which sense, identity differs from similitude as well as diversity.

IDES, *Idus*, in the Roman calendar; eight days in each month are so denominated, commencing in the months of March, May, July, and October, on the fifteenth day, and in the other months on the thirteenth, and reckoned backward, so as in the four months above specified to terminate on the eighth day, and in the rest on the sixth.

The word is variously derived ; it seems most probable to be formed of the Etrurian word *iduo*, for *divido*, to divide ; because the ides divided the month into two equal parts.

IDIOM, *Idioma*, either the peculiarities of a language, or the particular dialect of some province, differing in some respects from the language of the nation in general from which it is derived.

IDIOI, in the English laws, denotes a natural or fool from his birth.

A person who has understanding enough to measure a yard of cloth, number twenty rightly, and tell the days of the week, &c. is not an idiot in the eye of the law.

In other countries, repeating the Lord's prayer saves a man from being reckoned an idiot.

IDOLATRY, the adoration paid to idols and false gods, which is due to God alone.

Dr. Owen divides the whole of idolatrous worship into Sabaism and Hellenism. Dr. Prideaux imagines the planets, as mediators, to be the first objects of idolatrous worship : though Hellenism consists principally in the worship of dead men and dæmons, yet the Grecians at first adored the sun, moon, and stars, as even Plato owns. The Greek and Roman idolatry took its rise from that of the Egyptians, Phœnicians, and Syrians. It is a certain maxim, that religion, as well as learning, and mankind itself, had its first original in the East. We shall therefore consider that country first. Though the Egyptians were reputed the wisest of the Gentiles; yet they appear, in their religious worship of beasts, to have acted contrary to common sense. It is alledged, the worship of brutes was the veil, under which were concealed the mysteries of their religion, as their morals were hid under hieroglyphics. But it is abominable to adore sheep, cats, bulls, dogs, cows, storks, apes, birds of prey, wolves, and several sorts of oxen, as the Egyptians did, under any pretence whatever ; the very heathens ridiculed this kind of idolatry ; each province and district in Egypt entertained a peculiar devotion for some beast or other. What was signified by this monstrous Egyptian idolatry is not easy to conceive ; many fables have been invented to palliate its enormities. This idolatry had footing in Egypt, in the time of Moses and the Patriarchs. Thus much for the Egyptian idolatry. The Phœnicians were among the most an-

cient nations and first idolaters ; but all the account we have of their theology is in a little fragment preserved by Eusebius, little to be depended on.

It appears that the sun, moon, and host of heaven were worshipped by the Jews, when they turned to idolatry, after the example of neighbouring heathens; without images, by an humble prostration before them, or their emblems; light or fire : we must farther remark, though the Jews were guilty of several kinds of idolatry, especially before the Babylonish captivity, yet the heathens very unjustly charged them with several acts of idolatry of which they were innocent.

However, the long abode of the Israelites in Egypt left in them a strange propensity to idolatry, which neither the miracles of Moses, nor the rigour of his laws against the worship of idols, nor the splendid marks of God's presence in the Israelitish camp, were sufficient to overcome ; they had contracted such an invincible proneness to idolatry, that they not only persisted in the worship of the Egyptian deities, but adopted moreover every new one which came in their way, as they became acquainted with other nations. Moses has recorded many instances of their idolatry ; but they were guilty of many more, which have been preserved by other inspired writers, who severally upbraid them with setting up and carrying about the idols of Remphan, Malkom, and many others of the like nature.

Saul and David; with all their authority, were not able to root out idolatry from among this people ; they sacrificed upon high places, they consulted divines and magicians. Solomon himself, whom God had chosen to build his temple, erected altars to the false gods of the Phœnicians, Moabites, and Ammonites, &c. and there were few of the kings his successors who did not in this respect shew a like weakness ; thus Jeroboam, the son of Nebat, king of Israel; introduced the worship of the golden calves, which took so deep root in the kingdom of Israel, that it never was entirely extirpated.

Leaving the Eastern nations, it is now proper to remove to the West, and consider the idolatry of the Greeks and Romans, and other Western nations, before Christ. Nothing can be more monstrous than the idolatry of the Greeks and Romans, contained in their poets and classics, in the hands of every child, where we meet

meet with an incredible number of them.

The ancient Britons had abundance of magical rites, and adored a multiplicity of idols. The Germans had the same idols as the Britons: for, from the heathen Saxons, the English learned their idolatry.

Sozomen with Origen and others affirm, that when our Saviour was carried into Egypt, to avoid the persecution of Herod, the idols of this country, which were very numerous, and worshipped to the greatest degree of stupidity and excess, were most of them shaken off their basis; however, though idolatry was not perfectly suppressed, but was still kept on foot in the same measure even in Rome, this is certain, that it began to be laid aside after our Saviour's birth; the emperor Theodosius, jun. desirous to put a final end to the great work of abolishing idolatry, published very severe edicts, wherein he ordered all things belonging to idolatry to be destroyed throughout the Roman empire. At present idolatry flourishes most in China.

IDYLLION, in ancient poetry, properly signifies any poem of moderate extent, without considering the subject. But as the collection of Theocritus's poems were called Idyllia, and the pastoral pieces being by far the best in that collection, the term idyllion seems to be now appropriated to pastoral pieces.

JEALOUSY, in general, denotes the fear of a rival; but is more especially understood of the suspicion which married people entertain of each other's fidelity and affection.

Bitter Waters of JEALOUSY, in Jewish Antiquity, certain consecrated waters, which a woman was obliged to drink, in order to clear herself of the crime of adultery, whereof her jealous husband accused her; the consequence of which draught was, that if innocent she suffered no harm, but if guilty her belly swelled, &c.

JECUR, the liver, in anatomy. See *Liver*.

* JEFFREYS (lord GEORGE) baron Wem, commonly called judge Jeffreys, the sixth son of John Jeffreys, esq; of Acton, in Denbighshire, was educated at Westminster-school, whence he removed to the Inner Temple, where he applied himself to the study of the law; but, it is said, was never regularly called to the bar; for in 1666, being at the assizes in

Kingston, where few counsellors attended, on account of the plague, the necessity of the case gave him permission to put on a gown, and to plead, and this he continued till he reached the highest employments in the law. Alderman Jeffreys introduced him among the citizens of London, and he soon came into great business, and was chosen their recorder. At length resigning the recordership, he obtained the post of chief justice of the King's Bench, and soon after the accession of James II. the great seal. During the reign of king Charles II. he shewed himself a bitter enemy to those dissenting ministers who, in that time of persecution, were tried by him; and he was one of the greatest advisers and promoters of all the oppressions and arbitrary measures carried on in the reign of James II. and his sanguinary and inhuman proceedings against Monmouth's unhappy adherents in the West, will ever render his name infamous. Whenever the prisoner was of a different party, or he could please the court by condemning him, he would scarce allow him to speak for himself; but would load him with the grossest and most vulgar abuse, insulting the witnesses that spoke in his behalf, and even threaten the jury with fines and imprisonment, if they made the least hesitation about bringing in the prisoner guilty. Yet it is said, that when he was in temper, and matters perfectly indifferent came before him, no one became a seat of justice better. However, the brutality Jeffreys commonly shewed on the bench, where his voice and visage were equally terrible, at length exposed him to a severe mortification. A scrivener of Wapping having a cause before him, one of the opponent's council said he was a strange fellow, and sometimes went to church, and sometimes to conventicles; and it was thought he was a trimmer. At this the chancellor fired: "A trimmer!" said he; "I have heard much of that monster, but never saw one. Come forth Mr. Trimmer, and let me see your shape." He then treated the poor fellow so roughly, that on his leaving the hall, he declared he would not undergo the terrors of that man's face again to save his life, and he should certainly retain the frightful impressions of it as long as he lived. Soon after, the prince of Orange coming, the lord-chancellor dreading the public resentment, disguised himself in a seaman's dress, with intent to leave the kingdom, and was drinking

drinking in a cellar, when this scrivener coming into the cellar, and seeing again the face which had filled him with such horror, started; on which Jesfréys, fearing he was known, feigned a cough, and turned to the wall with his pot of beer in his hand. But Mr. Trimmer going out, gave notice that he was there, and the mob rushing in, seized him, beat him, spit in his face, shewed every mark of detestation, and carried him before the lord-mayor, who sent him with a strong guard to the lords of the council, by whom he was committed to the Tower, where he died, the 18th of April, 1689. It is by some imagined that his death was occasioned by the wounds he had received.

JEHOVAH, one of the Scripture names of God, signifying the Being who is self-existent, and gives existence to others. See the article *God*.

JEJUNUM, in anatomy, the second of the small guts, so called, because it is usually found empty.

* **JENKINS (HENRY)** reckoned the oldest man of the postdiluvians, lived at Ellerton upon Swale, in Yorkshire, and was born before any registers were kept in churches. He remembered the battle of Flowdenfield, fought on the 9th of September, 1513, and was sworn in the Chancery and other courts to above one hundred and forty years memory. There is a record preserved in the king's remembrancer's office in the Exchequer, which says, that "Henry Jenkins, of Ellerton upon Swale, labourer, aged one hundred and fifty-seven, was produced and deposed as a witness." In the last century of his life he was a fisherman, and when he was no longer able to follow that occupation, he begged about Bolton and other places in Yorkshire. He died in December, 1670, at the age of 169, and was buried at Bolton.

* **JERSEY**, an island of the English channel, fifteen miles north-west of the coast of Normandy, in France, and eight miles south of Portland, subject to Great Britain. It is about thirty miles in circumference, and of difficult access, on account of the rocks, sands, and forts, erected for its defence. The air is very wholesome, and yet it abounds with a great number of toads; and there is more fruit than corn in the island, though it is well watered with rivulets. It contains twelve parishes, and the chief town is St. Hilary, in the south part of the island. It lies extremely well for trade in time of peace,

and to annoy the French with their privateers in time of war. They are descended from French ancestors, and still governed by Norman laws, for the English courts have no jurisdiction here. Long. 2. 20. W. Lat. 49. 18. N.

* **JERUSALEM**, a city of Asia, formerly the capital of the Jewish kingdom, was taken by David from the Jebusites, and Nebuchadnezzar reduced it to ashes, in the eleventh year of the reign of Zedekiah, carrying away the Jews captives to Babylon, since which time they have been subject to some other nation; and, in the time of the first emperors of Rome, though they had kings, they were only such as were appointed by the Roman government. The city is now about three miles in circumference, and must have altered its situation; for mount Calvary, where criminals were usually executed, was formerly without the walls, but is now in the middle of this modern city; likewise mount Sion is without the walls, which was formerly near the center of the old city; however, the fortifications make a very antique appearance. The private buildings are now very mean, and the inhabitants very few, for it is chiefly considerable on account of the resort of pilgrims. The church of the Holy Sepulchre, which the pilgrims chiefly come to visit, stands on mount Calvary, and is a magnificent fabrick, in which almost every nation of Christians has a peculiar chapel. There are in this church twelve or thirteen places, consecrated on account of some particular actions done in them, relating to the death and resurrection of Christ, as the place where he was nailed to the cross, the place where the soldiers stood who pierced his side, where the angels appeared to the women after the resurrection, &c. On Good Friday, every year, there is a solemnization of his passion in this church, when all the parts of it are acted, such as the nailing of him to the cross, the crowning him with thorns, and the taking of his body down from the cross. A patriarch resides here, who is of the Greek church. It is one hundred and twenty miles south-west of Damascus. Long. 39. 25. E. Lat. 31. 50. N.

JESUITS, or the society of Jesus, a most famous religious order in the Romish church, founded by Ignatius Loyola, a native of Guipuscoa in Spain, who in the year 1538 assembled ten of his companions at Rome, principally chosen out of the

the university of Paris, and made a proposal to them to form a new order; when, after many deliberations, it was agreed to add to the three ordinary vows of chastity, poverty, and obedience, a fourth, which was, to go into all countries whither the pope should please to send them, in order to make converts to the Romish church. Two years after, pope Paul III. gave them a bull, by which he approved this new order, giving them a power to make such statutes as they should judge convenient; on which, Ignatius was created general of the order; which in a short time spread over all the countries of the world, to which Ignatius sent his companions, while he staid at Rome, from whence he governed the whole society.

The entire society is composed of four sorts of members; novices, scholars, spiritual and temporal coadjutors, and professed members. The novices continue for two years, after which they are admitted to make the three simple vows, of chastity, poverty, and obedience, in the presence of their superiors. The scholars add some spiritual exercises to their studies. The principal coadjutors assist the professed members, and also make the three simple vows: the temporal coadjutors, or lay-brothers, take care of the temporal affairs of the society; and the professed members, which compose the body of the society, besides the three simple vows, add a special vow of obedience to the head of the church in every thing relating to missions, among idolaters and heretics. They have professed houses for their professed members and their coadjutors; colleges, in which the sciences are taught to strangers; and seminaries, in which the young Jesuits go through a course of philosophy and theology. They are governed by a general, who has four assistants, and who appoints rectors, superiors of houses, provincials, visitors, and commissaries. The discipline of these houses, and especially of the colleges, was regulated by Ignatius himself. The order of Jesuits was lately suppressed in France and Spain, and that once famous society is now almost generally extirpated.

* JESUS CHRIST, the Son of God, and the Saviour of the world, was conceived of the Holy Ghost, and born of the Virgin Mary, at Bethlehem, according to the most common opinion, on the 25th of December, in the year of the world 4004. He gave sight to the blind, hearing to the

deaf, health to the sick, raised the dead to life, and confirmed the divinity of his mission by a multitude of the most beneficent miracles, which he performed in public. But, notwithstanding this, all that that the prophets had foretold came to pass. The Jews would not acknowledge him to be the Messiah; they unjustly condemned him to death, and nailed him to a cross on mount Calvary, between two thieves, on Friday the 3d day of April, in the 36th year of the vulgar æra, at about nine o'clock in the morning: Jesus Christ expired on this cross, for the salvation of the human race, at about three in the afternoon. His death was accompanied with several prodigies, for the sun was darkened, the rocks were rent, and many were raised from the dead. He arose, as he himself had foretold, and was seen of his apostles, and in an assembly of above five hundred of his disciples, the greatest part of whom were still living when St. Paul wrote to the Corinthians. Jesus Christ eat and drank with his disciples several times after his resurrection; he instructed them in all the truths necessary to salvation, ordered them to preach his gospel to all nations, and forty days after his resurrection, ascended up into heaven in their presence. Eight days after, his disciples received the gift and graces of the Holy Spirit. They immediately preached the doctrine and resurrection of Jesus, which they confirmed by new miracles, they suffered the most cruel persecutions, and sealed the truths they taught with their blood.

JET, *Gagates*, in natural history, a solid, dry, opaque, inflammable substance, found in large detached masses, of a fine and regular structure, having a grain like that of wood, splitting more easily horizontally than in any other direction, very light, moderately hard, not fusible, but readily inflammable, and burning a long time with a fine greenish flame.

It is of a fine deep black colour, very glossy and shining, except upon its surface, where it has been soiled by accident. When examined by the microscope, it is found to be composed of a number of parallel plates, very thin, and laid closely upon one another. It is not soluble in, nor makes any effervescence with acids. It should be chosen of the deepest black, of a moderate hardness, very light, and such as will split most evenly in an horizontal direction; this being its great characteristic, by which it is distinguished

I G N

from the cannel-coal, which breaks equally easy any way.

Jet is of great use to perfumers, and is sometimes prescribed in medicine.

JET D'EAU, a French term, frequently also used with us, for a fountain that casts up water to a considerable height in the air.

JEWEL, any precious stone or ornament beset with them.

JEWEL-OFFICE, an office belonging to the crown, that has the charge of fashioning and weighing the king's plate, and delivering it out by warrants from the lord chamberlain. The principal officer is the master of the jewel-office.

JEWS, those who profess obedience to the laws and religion of Moses, before whom every man worshipped God according to the inclination of his own heart.

How far the religious ceremonies of the Jews were copied from those of the Egyptians, among whom they had so long sojourned, or how far they were typical of something future, are questions which we leave to be discussed by divines. But as to the religion of the modern Jews, it is a manifest absurdity; since being without a temple, sacrifices, &c. it cannot be considered as subsisting any longer.

JEWISH HOURS, in chronology. See the article *Hour*.

JEZIDES, among the Mahometans, a term of similar import with heretics among Christians.

IGNIS FATUUS, in meteorology, a meteor, otherwise called, Will with a whisp.

IGNITION, in chemistry, the heating metals red-hot, without melting them. Lead and tin are too soft to bear ignition, which takes effect only in the harder metals, as gold and silver, but especially iron.

IGNORAMUS, in law, a term which signifies we are ignorant. This is used when the grand jury impannelled on the inquisition of criminal causes, reject the evidence as too weak to make good the presentment or indictment brought against a person, so as to bring him upon his trial by a petty jury; in which case they indorse this word on the back of the bill of indictment. In consequence of which, all further proceedings against the party accused are stopped, and the supposed offender is delivered without further answer.

IGNORANCE, *Ignorantia*, the privation or absence of knowledge.

I L E

IGNORANCE, in law, is a want of knowledge of the laws, which will not excuse a person from suffering the penalty inflicted on the breach of them; for every one is obliged, at his peril, to know the laws of the land.

IGUANA, in zoology, an American species of lizard, with a long round tail, five toes on each foot, and the crest of the throat and the dorsal suture dentated.

JIB, among seamen, the foremost sail of a ship, or that which is extended the furthest before the prow: it is, like all the other stay-sails, of a triangular form, and is hoisted from the jib boom towards the fore-top-mast head.

JIB-BOOM, a certain pole or sloping mast, which is run out on a line with the bowsprit, to bear out the jib to its proper extent: this boom can occasionally be drawn in, which is always the case when they come into a harbour, to prevent breaking amongst the shipping at anchor or passing.

ILEX, the holm-oak, or evergreen-oak, in botany, a genus of plants, which are propagated by sowing their seeds: the best season for this work is in the beginning of March; but then, as the acorns are ripe in autumn, they should be preserved either in sand, or dry earth, until the spring, otherwise they will lose their growing faculty; which is commonly the case with those brought annually from Genoa, scarce one seed in fifty of them ever rising; however, since we have many large trees now in England, which produce good seeds, we need not send to Italy for them; but were I to advise, I should much rather have them from Portugal than Italy; for the voyage being much shorter, they are generally brought from thence in very good condition; especially if they are brought over in the packet-boat to Plymouth.

The manner in which I would advise their being sown is, for large quantities, in drills at about four feet distance; but for a small parcel, they must be sown in rows on a bed much nearer.

These trees are by many greatly esteemed for hedges to surround wilderness quarters; but they are subject to grow too large for that purpose, because we should never hide the tops of the trees in such places from the sight.

The soil in which they thrive best, is a hazelly loam, not too strong, nor over light, in which they will grow to a large

large size, and resist the severest cold of our climate; and retaining their leaves all the winter, afford an agreeable prospect in that season: but they should by no means be planted near such walks, or other parts of the garden, as are intended to be kept clean; for in the month of April, when they cast their old leaves, they make a great litter, and are apt to blow about with the wind, and become very troublesome; and in June, when their male flowers fall off, they occasion no less trouble to clean them up daily in such places; and in the pleasantest season of the year, they are the most unsightly trees in a garden, the old leaves decaying at that season, and falling off; and the male flowers, which are generally in great plenty, are then produced, which renders it not so valuable in places much frequented; but for larger plantations, at a remote distance from the habitation, so as be just within the view, they make a very handsome appearance, especially in the winter season.

The wood of this tree is accounted very good for many sorts of tools and utensils; as mallet-heads, mallet-balls, chairs, wedges, beetles, pins, &c. as also for pallisades; and affords the most durable charcoal in the world; and is the common fuel in the southern parts of France and Italy. *Mil-ler's Gard. Diet.*

ILEX COCCIGERA, or **HOLMOAK**, is of much lower stature than the former sorts, and seldom grows to the height of a tree: this, though a native of the warmest parts of France, yet will endure the cold of our climate in the open air. It may be propagated in the same manner as the former; and deserves a place amongst other shrubs of low growth, for its curiosity, as being the plant on which the kermes are bred.

ILIAC PASSION, called also *Volvulus*, *Miserere*, *Mei*, and *Chordapsus*, in physic; a severe kind of colic.

This disease, by the Greeks named *eileon*, and by Celsus the disease of the smaller gut, is very acute. It is a violent inflammation of the intestine, which, unless speedy relief be given, soon terminates in a gangrene, and death.

Wherefore blood must be plentifully drawn with great expedition, not once only, but twice, and generally thrice: then the belly is to be moved; but this is very difficult to be done, because acrid cathartics cause too great an irritation; and are thrown up by vomit: therefore it

is to be attempted by stimulating clysters, and gentle cathartics, which are most likely to give mutual assistance to each other's operation. Anodynes too are necessary, but mixed with the purging medicines. Thus a very proper medicine will be a scruple of the cathartic extract, with one grain of the Thebaic extract; and some hours after, two spoonfuls of infusion of senna, with the addition of a fourth part of the tincture of senna, to be taken either every hour, or every two hours, till the patient has had a sufficient number of stools.

If this course prove ineffectual, it will be right to order quicksilver to be swallowed down; which has a two-fold use in this case; to wit, by its ponderosity, that of restoring the natural motion of the intestines, which is inverted; and by its slipperiness, that of softening and driving downward the excrements which stop the passage. Upon these accounts it is to be given in large quantities; to a pound weight at least; and generally requires to be repeated. Nor ought the physician to use any long delay in trying this experiment, for fear of an actual mortification of the inflamed parts, whereby the coats of the intestines are destroyed, and the quicksilver runs into the cavity of the abdomen.

In short, fomentations are of some service; particularly warm flannels soaked in spirits of wine; or what Sydenham prescribes, a live puppy held constantly on the bare belly. But an immersion up to the breast in the warm bath is far more beneficial; and if the pain is not diffused, it will be proper to apply cupping-glasses, with slight scarifications about the navel.

The same method of cure is to be observed in that severe disease by the French called *colica piétonum*, and by the English in the American islands, where it is very rife, the dry belly-ach: for it is a pain attended with a fever and inflammation, and most troublesome costiveness. *Mead.*

ILIACUS MUSCULUS, in anatomy, a broad thick muscle, lying on the inside of the os ilium.

ILIAD, in literary history, the name of an ancient epic poem, the first and finest of those composed by Homer.

As there was no true history before the first Olympiad, it is reasonable to suppose that Homer took the subject of his Iliad from those traditional stories which were

handed down from father to son, respecting the Trojan war; adding such other characters, allegories, and circumstances, as were suitable to his design, which was evidently that of displaying to his countrymen, who were Greeks, the mischievous effects of their too frequent dissensions, and the benefits arising from a contrary conduct.

It is to be observed, that at the time Homer wrote this poem, and for some centuries before, the Grecians were divided into as many small independent states as they had large cities: and as their body politic and government were distinct and different, so was too often their interest, whence arose animosities, and sometimes wars among themselves; yet as these people had very powerful neighbours, and inveterate enemies, they were often obliged, notwithstanding their own petty quarrels, to confederate themselves together under one general for their mutual safety: and when they were thus united, and had no contention among them, they were generally victorious, and an over-match even for the Persians; but on the contrary, when by their own feuds and dissensions, their armies were divided and weakened, their enemies prevailed over them, and part of their country was despoiled.

Homer saw this, and knowing that an instructive lesson on the subject, disguised under the allegories of an important action, and delivered in an insinuating pleasing manner, would do more good with such a people than the most powerful oratory and argumentation, he composed his *Iliad* for their use; the design of which is to shew, that unanimity and concord among princes and governors occasioned the preservation and prosperity of states, and that discord brought on their destruction. This therefore is the principal moral of the poem; and this he has exemplified in the anger of Achilles and its consequences, which form the action and fable of the poem, which are as follow.

Several Grecian princes, independent of each other, are united against the Trojans, to revenge themselves of an insult offered to Menelaus, king of Sparta. They elect Agamemnon, brother to the injured prince, their general, who by an act of violence affronts Achilles, the most valiant of all the confederates; upon which this prince breaks the union, withdraws from the army, and obstinately refuses to fight for

the common cause; whereupon there are contentions among the troops, who grow mutinous, and the Trojans taking advantage of the absence of Achilles, and of their disputes and divisions, recover new spirits, destroy a great number of the Greeks, and press them so close, that they are obliged to raise fortifications to secure their fleet, are about to quit the Phrygian coast, and to return home with dishonour. Agamemnon, by the advice of the other princes, solicits a reconciliation with Achilles, but in vain. He continues inexorable, and refuses them aid, even at a time when all their best generals were wounded, their fortifications destroyed, and the fleet set on fire: at last, however, he permits his dearest friend Patroclus to fight for the Greeks in his armour, who is killed by Hector; this draws the fury of Achilles on the Trojans; and Agamemnon and he having both severely suffered for their folly, are made friends: Achilles returning again to the army, kills Hector with his own hand, and the Trojans are vanquished: so that in this poem, which does not extend to the destruction of Troy, but ends with the death of Hector, because that puts an end to the anger of Achilles, and the action is complete, the poet has fully inculcated his intended moral, by shewing the terrible effects which ensued from a division among their princes, and the good effects which attended their union and friendship.

To excite curiosity, and raise our admiration to the highest pitch, he has inserted many things that are wonderful, and out of nature; but they are generally introduced with the pomp of celestial machinery, and by favour of the gods and goddesses, in order that they may appear probable, and obtain belief. We are also to observe, that as valour was a darling passion among the Greeks, he has magnified their deeds, that they might read his work with the greater pleasure, and that the moral might be more effectually fixed upon the mind.

Homer had such a comprehensive genius, such a fertile fancy, and was so well acquainted with persons and things, and especially with the passions and humours of mankind, that the ancients esteemed him as the great high-priest of nature, who was admitted into her inmost choir, and instructed in her most solemn mysteries. The characters of his persons, though very numerous, are drawn with so much judgment, with such a surprising variety, and

so distinguished by their manners and sentiments, that every one has something peculiar to himself, by which he is discovered even in his speeches from all the rest.

The distinctions he has observed in the different degrees of virtues and vices are extremely exact; and the single quality of courage, which he has given to most of his heroes, is so wonderfully diversified, that it appears different in each. Thus in a fine piece of painting, where some particular passion is represented, every face appears affected: but the attitude and turn of the features shew, that each is affected in a different manner, or in a different degree.

If we may credit Strabo the historian and geographer, Homer has been as exact in his description of countries and cities, as in that of his persons: but what more particularly recommends him to readers of taste and genius, is his amazing imagination, his fertility of invention, which is indeed the very fountain of all poetry, and discovers itself in a miraculous manner, not only in his fable, allegories, machinery, and characters, but even in his descriptions, images, and similes, which are ever bold and animated. Every thing is alive in Homer. There is little of narration; for the persons appear, as it were, before you, and speak for themselves. He has, as Aristotle observes, found out living words, and, by daring tropes and figures, conveys his sentiments in an unusual and surprising manner.

ILIUM, in anatomy, the third and last of the small guts, is situated principally below the navel, near the ossa ilii; whence its name.

IMAGE, in a religious sense, an artificial representation or similitude of some person or thing; used either by way of decoration and ornament, or as an object of religious worship and veneration; in which last sense, it is used indifferently with the word idol.

IMAGINATION, a power or faculty of the mind, whereby it conceives and forms ideas of things communicated to it by the outward organs of sense.

IMAM, a name applied by the Mahometans to him who is head of the congregations in their mosques; and by way of eminence to him who has the supreme authority both in respect to spirituals and temporals. There are subordinate imams in each town who represent the chief imam, but only with respect to religion. When the imam of the Mussulman religion is

mentioned without distinction, it is always restricted to the rightful and lawful successor of Mahomet, the fountain both of secular and sacred jurisdiction. The Mahometans are not perfectly agreed concerning the dignity of some of the circumstances of this office: some hold the imamate to be settled by divine right, like Aaronical priesthood, in one family: others think it not so unalterably tied to genealogy and descent, as to hinder its passing from one family to another; and they say that an imam may be deposed for vicious conduct, and his office conferred on another. The Shiites, or disciples of Ali, maintain, that this privilege belongs to the family of Ali exclusive of all others; Ali being sole heir to Mahomet: hence, they own no person for the head of religion, who cannot prove his descent in a right line from this first imam. There are imams belonging to particular mosques, who are in the nature of our parish-priests.

IMBECILITY, a languid, infirm state of body, which, being greatly impaired, is not able to perform its usual exercises and functions.

IMBIBING, the action of a dry porous body, that absorbs or takes up a moist or fluid one: thus, sugar imbibes water; a sponge, the moisture of the air, &c. See *Moisture, Hygrometer, &c.*

IMBRICATED, among botanists, an appellation given to such leaves of plants, as are placed over one another like the tiles of a house.

The term imbricated is likewise applied to some of the heart shells, from their being ridged transversely in the same manner.

IMITATION, in literary matters, the act of doing or striving to copy after, or become like another person or thing.

IMMACULATE, something without stain, chiefly applied to the conception of the holy virgin. See *Conception*.

IMMATERIAL, something devoid of matter, or that is pure spirit: thus God, angels, and the human soul, are immaterial beings.

IMMEDIATE, whatever is capable of producing an effect without the intervention of external means; thus we say, an immediate cause, in opposition to a mediate or remote one.

IMMEMORIAL, in law, an epithet given to the time or duration of any thing, whose beginning we know nothing of.

IMMENSITY, an unlimited extension, or which no finite and determinate space, repeated ever so often, can equal.

IMMER-

I M P

IMMERSION, that act by which any thing is plunged into water, or other fluid. See *Fluid*.

Immersion, in astronomy, is when a star or planet is so near the sun with regard to our observations, that we cannot see it; being, as it were, enveloped and hid in the rays of that luminary. It also denotes the beginning of an eclipse of the moon, or that moment when the moon begins to be darkened, and to enter into the shadow of the earth; and the same term is also used with regard to an eclipse of the sun, when the disk of the moon begins to cover it. In this sense emersion stands opposed to immersion, and signifies the moment wherein the moon begins to come out of the shadow of the earth, or the sun begins to shew the parts of his disk which were hid before. See *Eclipse*.

Immersion is frequently applied to the satellites of Jupiter, and especially to the first satellite; the observation whereof is of so much use for discovering the longitude. The immersion of that satellite is the moment in which it appears to enter within the disk of Jupiter, and its emersion the moment when it appears to come out.

The immersions are observed from the time of the conjunction of Jupiter with the sun, to the time of his opposition; and the emersions from the time of his opposition to his conjunction.

The peculiar advantage of these observations is, that during eleven months of the year, they may be made at least every other day. The perfection of this theory, and the praxis thereon, we owe to Mr. Cassini.

IMMORTAL, that which will last to all eternity; as having in it no principle of alteration or corruption: thus God and the human soul are immortal.

IMMUNITY, a privilege or exemption from some office, duty, or imposition, as an exemption from tolls, &c.

IMMUTABILITY, one of the divine attributes, founded on the absolute perfection of the Deity. See *God*.

IMPALED; in heraldry; when the coat of a man and his wife who is not an heiress are borne in the escutcheon, they must be marshalled in pale; the husband's on the right-side, and the wife's on the left: and this the heralds call baron and feme, two coats impaled.

If a man has had two wives, he may impale his coat in the middle between theirs; and if he has had more than two, they are to be marshalled on each side of his in their proper order.

I M P

IMPALPABLE, that whose parts are so extremely minute that they cannot be distinguished by the senses, particularly by that of feeling.

IMPANALLING, in law, signifies the writing down or entering a list or schedule, the names of a jury summoned by the sheriff to appear for such public service as juries are employed in. See *Pannel*.

IMPARLANCE, in law, a petition in court for a day to consider or advise what answer the defendant shall make to the plaintiff's action; and is the continuance of the cause till another day, or a longer time given by the court.

IMPEACHMENT, an accusation and prosecution for treason and other crimes and misdemeanors.

IMPEACHMENT of Waste, is a prohibition or restraint from committing of waste upon lands or tenements.

IMPEDIMENTS, in law; such hindrances as put a stop, or stay, to a person's seeking for his right by due course of law.

IMPENETRABILITY, in philosophy, that property of body; whereby it cannot be pierced by another: thus, a body, which so fills a space as to exclude all others; is said to be impenetrable.

IMPERATIVE, one of the moods of a verb, used when we would command; entreat or advise.

IMPERATOR; in Roman antiquity; a title of honour conferred on victorious generals by their armies, and afterwards confirmed by the senate.

IMPERATORIA, master-wort, in botany. It is perennial, a native of the Alps and Pyrenees; from whence we are supplied with roots supposed to be superior to those which are raised in our gardens.

IMPERFECT, something defective, or that wants some of the properties found in other beings of the same kind: thus mosses are called imperfect plants, because almost all the parts of fructification are wanting in them; and for the like reason, is the appellation imperfect given to the fungi and submarine plants.

IMPERFECT NUMBERS, such whose aliquot parts taken together, do either exceed or fall short of that whole number of which they are parts: they are either abundant or deficient.

IMPERFECT TENSE; in grammar, a tense that regards some præterite tense, or denotes the thing to be at that time
pre-

present, and not quite finished; as *scribe-ham, I was writing.*

IMPERIAL, something belonging to an emperor or empire, as imperial crown, imperial chamber, imperial cities, imperial diet, &c.

IMPERSONAL VERB, in grammar, a verb to which the nominative of any certain person cannot be prefixed; or, as others define it, a verb destitute of the two first and primary persons, as *deceit, sportet*, &c.

IMPERVIOUS, a thing not to be pervaded, nor passed through, either by reason of the closeness of its pores, or the particular configuration of its parts.

IMPETIGO, in medicine, a name by which the leprosy of the Greeks is sometimes called.

IMPETIGO is also a species of itch attended with dry scales or scurf, and an uneasy pruriginous itching.

IMPETUS, in mechanics, the force with which one body impels or strikes another.

IMPLEAD signifies to sue or prosecute by course of law.

IMPLEMENTS, all things necessary for a trade, or the furniture of an household; in which sense it is frequently used in wills, conveyances of moveables, &c.

IMPLICATION, in law, is where something is implied that is not expressed by the parties themselves in their deeds, contracts, and agreements.

IMPORTATION, in commerce, the bringing merchandize into a kingdom from foreign countries; in contradistinction to exportation.

IMPOSITION of Hands, a religious ceremony, in which the bishop lays his hand upon the head of a person, in ordination, confirmation, or in uttering a blessing. This practice is also generally observed by the dissenters at the ordination of their ministers, when all the ministers present place their hands upon the head of him whom they are ordaining, while one of the body prays for a blessing on him and his future labours.

IMPOSSIBLE, that which cannot be done or effected.

A proposition is said to be impossible, when it contains two ideas, which mutually destroy each other, and which can neither be conceived nor united together in the mind: thus, it is impossible that a circle should be a square, because we conceive clearly that squareness and roundness destroy each other by the contrariety of their figure.

IMPOST, in law, a tribute or custom; but is more particularly applied to signify that tax which the crown receives for merchandizes imported into any port or haven. See *Duty*.

Some, notwithstanding, distinguish imposts from customs, which last are rather the profits arising to the king from goods exported. See *Customs*.

IMPOSTS, in architecture, the capitals of pillars, or pilasters, which support arches.

IMPOSTHUME, in surgery, &c. the same with abscess.

IMPOTENCE, or **IMPOTENCY**, in general, denotes want of strength, power, or means to perform any thing.

IMPRACTICABLE CASE, in algebra, that otherwise called irreducible.

IMPRECATION, a curse, or wish that evil may befall any one.

IMPRESSION is applied to the species of objects, which are supposed to make some mark or impression on the senses, the mind, and the memory.

IMPRESSION, also denotes the edition of a book, regarding the mechanical part only; whereas edition, besides this, takes in the care of the editor, who corrected or augmented the copy, adding notes, &c. to render the work more useful.

IMPRISONMENT, the state of a person restrained of his liberty, and detained under the custody of another.

IMPROPRIATION, a parsonage or ecclesiastical living, the profits of which are in the hands of a layman; in which sense it stands distinguished from appropriation, which is where the profits of a benefice are in the hands of a bishop, college, &c. though these terms are now often used promiscuously.

IMPUTATION, in general, the charging something to account of one, which belonged to another: thus, the assertors of original sin maintain, that Adam's sin is imputed to all his posterity.

In the same sense, the righteousness and merits of Christ are imputed to true believers.

INACCESSIBLE, something that cannot be come at, or approached, by reason of intervening obstacles, as a river, rock, &c. It is chiefly used in speaking of heights and distances.

INACTIVITY of Matter. See *Inertia*.

INALIENABLE, that which cannot be legally alienated or made over to another: thus the dominions of the king, the

the revenues of the church, the estates of a minor, &c. are inalienable, otherwise than with a reserve of the right of redemption.

INANIMATE, a body that has either lost its soul, or that is not of a nature capable of having any.

INANITION, among physicians, denotes the state of the stomach when empty, in opposition to repletion.

INAUGURATION, the coronation of an emperor or king, or the consecration of a prelate : so called from the ceremonies used by the Romans, when they were received into the college of augurs.

INCA, or **YNCA**, a name given by the natives of Peru to their kings, and the princes of the blood. Pedro de Cieca, in his Chronicle of Peru, gives the origin of the incas, and says, that that country was, for a long time, the theatre of all manner of crimes, of war, dissension, and the most dreadful disorders, till at last two brothers appeared, one of whom was called Manco Capac ; of this person, the Peruvians relate many wonderful stories. He built the city of Cusco, made laws, established order and harmony by his wise regulations, and he and his descendants took the name of inca, which signifies king or great lord. These incas became so powerful, that they rendered themselves masters of all the country from Pasto to Chili, and from the river Maule on the south, to the river Augasmayo on the north ; these two rivers forming the bounds of their empire, which extended above thirteen hundred leagues in length. This they enjoyed till the divisions between inca Guascar and Atabalipa, which the Spaniards laying hold of, made themselves masters of the country, and destroyed the empire of the incas.

INCANTATION, denotes certain ceremonies, accompanied with a formula of words, and supposed to be capable of raising devils, spirits, &c.

INCAPACITY, in the canon-law, is of two kinds : 1. The want of a dispensation for age in a minor, for legitimation in a bastard, and the like : this renders the provision of a benefice void in its original. 2. Crimes and heinous offences, which annul provisions at first valid.

INCARNATION, in theology, the act whereby the second person of the Holy Trinity assumed the human nature, viz. a true body and reasonable soul, in order to accomplish the redemption of fallen man-kind.

This fundamental doctrine of Christianity is very expressly taught in Scripture : thus, in Gal. iv. 4. it is said, " God sent forth his son, made of a woman : " and 1 John iv. 14. " And we have seen " and do testify, that the Father sent the " Son to be the Saviour of the world."

The generation of Christ was miraculous, as being conceived by the power of the Holy Ghost, and born of the Virgin Mary ; from the time of which blessed nativity, the christian æra commences. See *Epocha*.

INCARNATIVES, in surgery, medicines which assist nature in filling up wounds or ulcers with flesh ; or rather remove the obstructions thereto.

Internal incarnatives are aliments which supply a balsamic chyle, and consequently generate flesh, and produce a full or plump habit.

INCENSE, or **FRANK-INCENSE**, in the materia medica.

INCEST, the crime of venereal commerce between persons who are related in a degree wherein marriage is prohibited by the law of the country.

INCH, a well known measure of length ; being the twelfth part of a foot, and equal to three barley corns in length. See *Foot* and *Measure*.

INCH of Candle, or sale by inch of candle. See *Candle*.

INCIDENCE, in mechanics and optics, denotes the direction in which one body strikes on another.

INCIDENT, in law, something that inseparably belongs to another : thus, a court baron is incident to a manor.

INCLE, a kind of tape made of linen-yarn.

INCLINATION is a word frequently used by mathematicians, and signifies the mutual approach, tendency or leaning of two lines, or two planes, towards each other, so as to make an angle.

Inclination of a right line to a plane, is the acute angle which that line makes with another right line drawn in the plane through the point where the inclined line intersects it, and through the point where it is also cut by a perpendicular drawn from any point of the inclined plane.

Inclination of the axis of the earth, is the angle which it makes with the plane of the ecliptic ; or the angle contained between the planes of the equator and ecliptic.

Inclination of a planet, is an arch of the circle of inclination, comprehended be-

between the ecliptic and the plane of a planet in its orbit.

The greatest inclination of Saturn, according to Kepler, is $2^{\circ} 32'$; of Jupiter, $1^{\circ} 20'$; of Mars, $1^{\circ} 50' 30''$; of Venus, $3^{\circ} 22'$; of Mercury, $6^{\circ} 54'$. According to De la Hire, the greatest inclination of Saturn is $2^{\circ} 33' 30''$; of Jupiter, $1^{\circ} 19' 20''$; of Mars, $1^{\circ} 51' 00''$; of Venus, $3^{\circ} 25' 5''$; of Mercury, $6^{\circ} 52' 00''$.

INCLINATION of a *Plane*, in dialling, is the arch of a vertical circle, perpendicular both to the plane and the horizon, and intercepted between them.

INCLINED PLANE, in mechanics, that which makes an oblique angle with the horizon.

INCLINERS, or **INCLINING DIALS**. See the article *Dialling*.

INCLOSURE, in husbandry, the fence or hedge made to inclose lands.

A very good inclosure may be made of elder-sticks, or truncheons, cut ten or twelve feet long, and stuck into the bank slopewise, so as to make a chequer-work. These make the speediest shelter of any; and when the trees are grown up, they are valuable for the turner's use. They succeed extremely well in watery places; and when planted on the banks of rivers, they prevent them from being undermined by the current.

The throwing down inclosures is an offence punishable by our ancient statutes; yet if the lord of a manor incloses part of the waste, and does not leave sufficient room for the commoners, they may break down such inclosures, or have a writ of assize.

INCOGNITO, or **INCOG**, is applied to a person that is in any place where he would not be known: but it is more particularly applied to princes, or great men, who enter towns, or walk the streets without their ordinary train, or the usual marks of their distinction and quality.

INCOMBUSTIBLE, something that cannot be burnt or consumed by fire.

INCOMMENSURABLE, a term in geometry, used where two lines, when compared to each other, have no common measure, how small soever; that will exactly measure them both. And in general, two quantities are said to be incommensurable, when no third quantity can be found that is an aliquot part of both.

Such are the diagonal and side of a square; for though each of those lines have infinite aliquot parts, as the half, the third, &c. yet not any part of the

one, be it ever so little, can possibly measure the other, as is demonstrated in prop. 17. lib. x. of Euclid.

Rappus, lib. iv. prop. 17. speaks also of incommensurable angles. As to surfaces which cannot be measured by a common surface, they are said to be incommensurable in power.

INCOMMENSURABLE NUMBERS, such as have no common divisor that will divide them both equally.

INCOMPATIBLE, that which cannot subsist with another without destroying it; thus cold and heat are incompatible in the same subject, the strongest overcoming and expelling the weakest.

INCORPOREAL, a thing, or substance, which has no body; as God, angels, and the soul of man.

INCORRUPTIBLE, that which cannot be corrupted.

INCRASSATING, in pharmacy, &c. the rendering fluids thicker by the mixture of other substances less fluid; or by the evaporation of the thinner parts.

INCREMENT, and **DECREMENT**, the increase and decrease of a quantity. See *Series*.

INCRUSTATION, in surgery, the induction of a crust or eschar upon any part.

Among masons, incrustation signifies the lining or coating of a wall, either with glossy stones, rustics, marble, pottery, or stucco-work, and that either equally or in pannels and compartments.

INCRUSTED, or **INCRUSTATED COLUMN**, is a column consisting of several pieces, or slips of some precious marble masticated or cemented round a mould of brick, or other matter.

INCUBATION, the action of a hen, or other fowl brooding on her eggs.

INCUBUS, or **EPHIALTES**, in physic, commonly called the night-mare, a disorder under which the patient cannot stir himself, but with the utmost difficulty; is seized with a numbness and sense of weight, with a dread of suffocation, and an oppression, as from some body falling suddenly upon him.

The word is derived from the Latin *incumbo*, because the patients fancy they feel something ascending and sitting upon their breast.

The incubus is of a bad kind, when it seizes the patient, though awake, in the night; but worst of all, when, after molesting him in his sleep, it leaves him to awake under a cold sweat and palpitation.

of the heart. Such as have been long and often subject to it, have reason to apprehend some dangerous distempers of the head, as a vertigo, apoplexy, &c.

The cure consists in evacuations by phlebotomy and cathartics. The patient must be kept to a thin diet, and avoid all flatulent food.

INCUMBENT, a clerk, or minister, who is resident on his benefice: he is called incumbent, because he does, or at least ought to bend his whole study to discharge the cure of his church.

INCURVATION of the Rays of Light; their bending out of a rectilinear or straight course, occasioned by refraction.

INDEFEISIBLE, or **INDEFEAZABLE**, a term in law, for what cannot be defeated or made void; as an indefeisible estate of inheritance, &c.

INDEFINITE, or **INDETERMINATE**, that which has no certain bounds, at least assignable by the human mind.

INDEFINITE, in grammar, implies such nouns, pronouns, verbs, participles, &c. which are left in an uncertain indeterminate sense, and not fixed to any particular time, or other circumstance.

INDELIBLE, something that cannot be cancelled or effaced.

INDEMNIFY, in law, the saving harmless; or a writing to secure one from all damage that may ensue from any act. An indemnity in regard to estates, is called a warranty. See *Warranty*.

Act of **INDEMNITY**, the same with act of grace.

INDENTED, in heraldry, is when the out-line of an ordinary is notched like the teeth of a saw.

INDENTED LEAF, among botanists, is one notched round its verge.

INDEPENDENTS, a sect of protestants in England and Holland, so called from their independency on other churches, and their maintaining that each church or congregation has sufficient power to act and perform every thing relating to religious government within itself, and is no way subject or accountable to other churches or their deputies.

The present independents differ from the presbyterians only in their church government, in being generally more attached to the doctrines distinguished by the term orthodoxy, &c. and in administering the Lord's Supper at the close of the afternoon's service. See *Presbyterians*.

The several sects of baptists are all independents with respect to church government.

INDETERMINATE, in general, an appellation given to whatever is not certain, fixed, and limited; in which sense, it is the same with indefinite.

INDETERMINATE PROBLEM, in algebra, one which is capable of an indefinite number of solutions.

INDEX, in anatomy, the same with the fore-finger.

INDEX, in arithmetic and algebra, shews to what power any quantity is involved, and is otherwise called exponent.

INDEX of a *Logarithm*, that which shews of how many places the absolute number belonging to a logarithm, doth consist; and of what nature it is, whether an integer or fraction. Thus, in this logarithm 2.523421, the number 2 standing on the left-hand of the point is called the index; because it shews that the absolute number answering to the above logarithm, consists of three places: for the number is always one more than the index.

If the absolute number be a fraction, then the index of the logarithm hath a negative sign, marked thus 2.523421. See *Logarithm*.

INDEX of a *Globe*, the little style or gnomon, which being fixed on the pole of the globe, and turning round with it, points out the hours upon the hour circle.

Expurgatory **INDEX**, a catalogue of prohibited books in the church of Rome.

***INDIA PROPER**, or **INDOSTAN**, a country of Asia, between the rivers Indus and Ganges, subject to the great mogul. It is partly in the torrid, and partly in the temperate zone, from whence we may conclude that the temperature of the air must be very different, being mild in the north, and very hot in the south, which, however, is a little abated by the rains, which continue three months in the year, which likewise contribute to render the earth more fruitful. It produces rice, millet, cotton, figs, pomegranates, oranges, citrons, and cocoa-nuts. There are likewise mines of gold and silver, several sorts of precious stones, and salt-petre. They fish for pearls in the sea and in the rivers. Besides the animals which are in Europe, they have camels, elephants, rhinoceroses, lions, tigers, leopards, and a great number of apes and monkeys, which do a great deal of mischief. This country was little known to the Europeans till 1498, when the Portuguese discovered the way thither by sea, round the Cape of Good Hope. They

They enjoyed their traffic without a rival till the year 1600, when the English and Dutch put in for a share of it; and these three nations have had their forts and factories there ever since; but the Portuguese are greatly reduced, and have not above one of any consequence remaining. Indostan is a vast country, at least one thousand two hundred and fifty miles long. The inhabitants are called Moguls, and are civil and humane with regard to strangers, and have not so great an enmity to the Christians as to the Mahometans. They are much given to luxury, love to make a show, and are extravagant in their expences. The great mogul was the richest prince in the world, especially in diamonds; but Nadir Shah, a late king of Persia, deprived him of all his riches. In the pleasant season of the year, the mogul usually takes the field, and makes a tour about his dominions, when all manner of tradesmen, merchants and mechanics, follow the camp, leaving but few in the great towns. He commonly stays till the rainy season, which begins in June, and continues till October, when they cultivate the lands, and sow the rice, which is the principal grain. The revenue of the great mogul is said to be near fifty millions sterling a year, which arises partly from the lands, and partly from duties, customs, and forfeitures, for he is heir to all the great officers, and has likewise rich presents upon various occasions, particularly from all the governors who are under him. He has likewise a considerable sum of money, or diamonds from the mines of Golconda.

The government is despotic, and the great mogul is master not only of the goods, but the lives of his subjects. The provinces are governed by omars, or great lords, who have the title of nabobs, and have a sufficient quantity of land to maintain their dignity.

The inhabitants are very different with regard to their colour, for towards the north they are only a little tawny, but at the extremity of the south they are very black. With regard to religion there are some Mahometans, which is the profession of the court; but the Pagans or Gentoos are vastly more numerous. Some of these believe the transmigration of souls, for which reason they will not kill any beast, nor even the most troublesome insect. There are a sort of religious men amongst them called faquirs, who wander about, and subject themselves to incredible penances. Some of them spend several years without

lying down, but lean upon a cord hung up for that purpose; others will shut themselves up in a pit for nine or ten days together, without eating or drinking, as is pretended. Some hold up their arms so long together, that the joints become stiff, and they are never able to move them afterwards; and others again put fire on their heads, and let it burn to the very bone. The Indians are generally strong and well made, but not hardy enough for war. There are several languages in Indostan; such as the Turkish, the Persian, the native Indian, the Arabic, and the language of the Bramins, which is only known to their doctors.

* **INDIA ON THIS SIDE THE GANGES**, a peninsula, is seated between the seventh and fortieth degree of north latitude, and its breadth is very unequal, because it continually grows less, as far as Cape Comorin, which is the southern point. This country is entirely within the torrid zone, and therefore the air is hotter than Indostan; but it resembles that country very much, as to the nature of the soil, its produce, manners, and religion.

* **INDIA BEYOND THE GANGES**, a larger country than the former, and likewise a peninsula, is seated between the first and the twenty-seventh degree of north latitude, and is in breadth, from east to west, between the 92d and the 104th degree of longitude. It is bounded on the north by Tibet and Boutan, on the east by Tonquin, and Cochinchina on the south, and by the Indian Ocean, the bay of Bengal, and the streights of Malacca, on the west, being near two thousand miles in length from north to south. The complexion of the natives in these parts is an olive colour, and their religion Paganism in various sects. They have a vast number of elephants, and consequently must have a great deal of ivory. Our merchants frequent these countries in search of gold, precious stones, canes, opium, and the same sorts of merchandize that are found in other countries within the tropics. But they have no other corn besides rice, which they plant at the beginning of the rains, and when the waters run off the fields, it is then the time of their harvest.

INDIAN-BERRY, *Cocculus Indicus*, in commerce, &c.

INDIAN-LEAF, *Malabathrum*, in botany, the leaf of a tree brought from the East-Indies. These leaves are no otherwise made use of than as an ingredient in mithridate and theriaca; and are, when

in their greatest perfection, far inferior to the mace.

INDICATION, in physic, whatever serves to direct the physician how to act.

INDICATIVE, in grammar, the first mood, or manner of conjugating a verb, by which we simply affirm, deny, or ask something; as, *amant*, they love; *non amant*, they do not love; *amās tu*, dost thou love?

INDICTION, in chronology, a cycle, of fifteen years.

INDICTMENT, in law, a bill or declaration of complaint, at the suit of the king, drawn up in form of law, and exhibited against a person, and afterwards preferred to the grand jury or inquest, who are to find whether the complaint be true or not. An indictment differs from an accusation only in this, that the preferrer of the bill is not tied to the proof thereof, under any penalty, except there appear to be a conspiracy.

INDIGESTION, *Indigestio*, a want of due coction; either in the food, the humours of the body, or excrements.

INDIGO, in commerce, a preparation of the juice of a plant, whose leaves are small, fleshy, and soft, of a greenish brown colour on the upper side, pale and as it were silver-coloured underneath. This plant, by some called anil, or nil, has several slender knotty stalks, which spread into small branches, clothed each with from four to ten pair of these leaves; and an odd one at the end: it rises to the height of about two feet, and produces reddish flowers, in shape resembling those of broom, but smaller, followed by oblong pods, containing the seeds.

Indigo is commonly divided, from the colour which it exhibits upon breaking, into three kinds, copper-coloured, purple, and blue. It is said that the dyers use chiefly the first; and the calico-printers, for this drug gives a durable stain to linen as well as woollen, the last. On what particular circumstances these different appearances depend, we know not; nor is it certainly known, whether the real quality of the indigo has any connexion with them. The deepest and liveliest indigo, rubbed with the nail, looks like polished copper; and solutions of all the sorts, made in alkaline lixivias, assume alike a copper-coloured skin upon the surface. Good indigo is moderately light, breaks off a shining surface, and burns almost wholly away upon a red-hot iron. It is quickly penetrated by water, and reduced into a kind of paste:

a considerable part is at the same time diffused through the liquor, and very slowly subsides. This is probably what Labat and Hellot mean by its dissolving in water; for no part of the indigo really dissolves; it cannot indeed be expected that it should from the process by which it is obtained. Indigo requires an equal quantity or more of fixed alkaline salt to render it totally soluble in water. On digesting the indigo, with a gentle heat, in the solution of the alkaline salt, a shining copper coloured skin begins to appear, and gradually covers the whole surface: on agitating the matter, a large blue flower or froth arises, and the liquor underneath appears of a deep green. If woollen cloth, without any other preparation than moistening it with warm water, be dipped in this hot liquor, it comes out perfectly green, and changes almost instantly in the air to a fine blue. This is the common process of dying blue. Mr. Hellot describes two indigo vats with urine; one of which is used hot like the foregoing, and the other cold. The hot vat consists of equal parts of indigo, alum, and tartar, digested in urine till the liquor becomes green. The cold one is prepared, by digesting powdered indigo with vinegar for twenty-four hours, in the proportion of four pounds to about three quarts; then mixing the matter with about fifty gallons of urine, and stirring the whole together every night and morning, till the liquor turns green, and gathers a head like the common vat.

Indigo is fitted for printing on linen, by diluting it with water into the consistence of a syrup; then adding some powdered pearl-ashes, green vitriol, and lime newly slaked; with so much water, occasionally, as will reduce them into the consistence of thin paint; mixing the whole thoroughly together, and stirring the matter every now and then, till it gains a copper-colour on the surface. The proportions used by the workmen are, two parts of indigo, one of pearl-ashes, three of vitriol, and two of lime. The same composition, diluted with a sufficient quantity of water, about six gallons to a pound of indigo, and boiled, gives a durable blue to tanned skins, whether dipped in hot or cold.

The solution of indigo in oil of vitriol does not appear green till boiled. The thick compound, dropped into water no hotter than the hand can bear, communicates a bright blue colour: woollen cloth or silk, prepared with alum and tartar, acquire from this liquor the beautiful but perish-

perishable blue dye, called Saxon blue. The Saxon green is dyed, by dipping the stuff a second time in the yellow decoction of fustick; or more compendiously, by mixing the acid blue composition with that decoction at once, till the liquor has gained the depth of colour required.

It is said that the dyers of Norwich, who purchased this secret from Saxony, prepare the blue composition by grinding nine parts of indigo with twenty of red arsenic; then adding to them, in a glazed vessel, forty-eight parts of oil of vitriol, and stirring them well together: after the mixture has stood for twenty-four hours, it is fit for use. In Mr. Hellot's process, received likewise from Germany, the proportions are somewhat different; and instead of red arsenic, cobalt and orpiment are used. These differences are immaterial: the only use of the additional matter seems to be, to divide the indigo, and render it more easily miscible with the acid. It will succeed, in small specimens, with red and with white arsenic, with orpiment and with cobalt, with sulphur, with antimony, with powdered glass, with powdered sand, and with flint.

INDIVIDUAL, *Individuum*, in logic, a particular being of any species, or that which cannot be divided into two or more beings equal alike.

INDIVISIBLE, among metaphysicians. A thing is said to be absolutely indivisible, that is a simple being, and consists of no parts into which it may be divided. Thus God is indivisible in all respects, as is also the human mind, not having extension or other properties of body.

INDIVISIBLES, in geometry, the elements or principles into which any body or figure may be ultimately resolved; which elements are supposed infinitely small: thus a line may be said to consist of points, a surface of parallel lines, and a solid of parallel and similar surfaces; and then, because each of these elements is supposed indivisible, if in any figure a line be drawn through the elements perpendicularly, the number of points in that line will be the same as the number of the elements; whence we may see that a parallelogram, prism, or cylinder, is resolvable into elements or indivisibles, all equal to each other, parallel and like to the base; a triangle into lines parallel to the base, but decreasing in arithmetical proportion, and so are the circles which constitute the parabolic conoid, and those

which constitute the plane of a circle, or surface of an isosceles-cone.

INDORSEMENT, in law, any thing written on the back of a deed, as a receipt for money received. See *Bill*.

INDUCEMENT, in law, what may be alledged as a motive; and, in our law, it is used especially in several cases; as, there is an inducement to actions, to a traverse in pleading, and to an offence committed, &c.

INDUCTION, in law, is putting a clerk or clergyman in possession of a benefice or living to which he is collated or presented.

INDULGENCES, in the Romish church, a remission of the punishment due to sins, granted by the church, and supposed to save the sinner from purgatory. Clement VI. in his decretal, which is generally received by the church of Rome, declares, that our Saviour has left an infinite treasure of merits, arising from his own sufferings, besides those of the blessed virgin and the saints; and that the pastors and guides of the church, and more especially the popes, who are the sovereign disposers of this treasure, have authority to apply it to the living, by virtue of the keys, and to the dead, by way of suffrage, to discharge them from their respective proportions of punishment, by taking just so much merit out of this general treasure, as they conceive the debt requires, and offering it to God.

It was the great abuse of indulgences that contributed not a little to the first reformation of religion in Germany, where Martin Luther began first to declaim against the preachers of indulgences, and afterwards against indulgences themselves: for since that time the popes have been more sparing in the exercise of this power; however, they still carry on a great trade with them in the Indies, where they are purchased at two reals a-piece, and sometimes more.

INDULT, in the church of Rome, the power of presenting to benefices granted to certain persons by the pope.

INDULTO, a duty, tax, or custom paid to the king of Spain, for all such commodities as are imported from the West-Indies in the galleons.

INERTIA of Matter, in philosophy, is defined by Sir Isaac Newton to be a passive principle, by which bodies persist in their motion or rest, receive motion in proportion to the force impressing it, and resist as much as they are resisted. It is also

also defined by the same author to be a power implanted in all matter, whereby it resists any change endeavoured to be made in its state.

Since, according to this law, a body once in motion always continues in that motion, the philosophers ask, Why all projectiles lose by degrees their motion? Why do they not proceed in infinitum? If motion did not of its own nature decay, a stone thrown at the beginning of the world, would by this time have gone through an immense and almost infinite space. And so indeed it would, if its motion had been in vacuo, or in free space, and without any gravity. But since all projectiles are carried either through the air, or on the rough surfaces of other bodies, they must be necessarily retarded: for since all bodies in motion must drive and thrust out of its place the resisting air, or overcome the roughness of the superficies upon which they are moved, they will lose all that force and motion that is constantly employed in overcoming these obstacles, and consequently the motion of projectiles will be continually diminished: but if there was no resistance in the medium, no roughness in the superficies on which they were moved, no gravity that continually forces the bodies towards the earth, motion would always continue the same, without any retardation at all. So in the heavens, where the medium is exceedingly rare, the planets do continue their motions for a very long time; and upon ice, or any other very smooth surface without any roughness, heavy bodies in motion are not soon brought to rest.

INFALLIBLE, what cannot deceive, nor be deceived.

INFAMOUS, something notoriously contrary to virtue or honour.

INFAMOUS, in law, denotes a person of no repute in the world. There are two kinds of infamy; some persons being infamous *de jure*, or stigmatized by public judgments: others are infamous *de facto*, as being of a scandalous profession, as a catchpole, hangman, informer, &c.

INFANT, *Infans*, in medicine, denotes a young child.

The diseases incident to little children, and those newly born, are, the thrush, pukings, coughs, watchings, stauings, inflammations of the navel, runnings of the ears, and gripes. When they begin to breed teeth, troublesome itchings of the gums, fevers, convulsions, diarrhoeas hap-

pen, especially when they put forth the canine teeth, and in those particularly who are very gross and inclinable to be costive. When advanced from two to ten years and longer, they labour under inflammations of the tonsils, inward luxations of the vertebræ next the head, asthma, stone, round belly-worms, ascarides, pensile warts, satyriases, stranguries, scrophulous tumors, and other tubercles.

Of all the afflictions which torture tender infants, violent pains of the abdomen, and inflations most frequently occur. The principal intention of the physician, in order to cure these, is to absorb, correct, and gently evacuate the corrosive acid of the primæ viæ. If the disorder, as it generally happens, arises from vitiated milk, the nurse is either to be changed, or care must be taken that she do not at that time indulge herself with flatulent food; and gentle laxatives, if she be costive, are proper for the nurse. Among these, the preparations of rhubarb are the most eligible; nor are carminative medicines less beneficial to the nurse. But nothing relieves infants more than clysters and the internal exhibition of preparations of rhubarb, as also a scruple of aniseed grossly pounded, if given with the first spoonful of sugared pap.

If there be a suspicion of worms, it is proper to give the remedies accommodated to kill and dislodge these hostile animals. External remedies should also be applied against the violence of this disorder, as emollients.

Epilepsies and convulsions are generally more incident to childhood, which continue from the first to the seventh year, because, in infants, the nervous, membranous, and exquisitely sensible parts consist of very tender and very moveable small fibres, which being irritated, though in the slightest manner, are very easily thrown into spasmodic commotions.

If this disorder take its rise from a fright or violent passion of the nurse, it is proper to give what gently curbs the inordinate and spasmodic motions of the nervous system, such as emollient and carminative clysters, and antispasmodic powders, either exhibited alone, or in some water of a sedative quality. If it arise from the milk rendered corrosive in the infant, besides demulcent clysters, absorbent powders exhibited with saffron, musk, or a small quantity of the extract of castor, are of singular service, especially if a pretty rich decoction of harts-horn be used

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for drink : but if the *primæ viæ* are to be purged, this end is answered by a decoction impregnated with manna, incessively exhibited with a few drops of the oil of tartar per deliquium dropped into it. If the disorder proceeds from too large a quantity of gross milk, the infant should be fed with less, and such aliments given, as render it more fluid. Likewise a third or fourth part of a grain of emetic tartar, mixed with syrup of violets and some proper distilled water, is often serviceable, when given out of the paroxysm. When the meconium produces this disorder, it ought to be evacuated by gentle laxatives mixed with absorbents. If an epilepsy proceed from a repulsion of the itch, scald head, &c. those things should be used which may recal the impure matter to the surface of the body, and vesicatories applied to the nape of the neck, have been found very beneficial.

As to an atrophy in children, where there is a gradual consumption of the whole body, attended commonly with an inflation of the abdomen, and an extraordinary injury of the several functions, we are, in general, to take care, that, after weaning, they be supplied with food of such a kind, as adds nutriment and strength to the emaciated body, as broths of bruised fowls, or capons prepared without the fat, paps of apples prepared with the yolks of eggs and sugar, together with a little cinnamon, mace, and wine. When obstructions happen in the mouths of the lacteals, proper deobstruents are to be used.

A cardiacgia in children principally discovers itself by an uncommon straitness over the breast, joined with difficult respiration, by inflations of the abdomen and præcordia, by inquietudes and eructations ; to which slight fevers and convulsions are frequently joined.

During the fit, but little milk should be given the infant, and antispasmodic absorbent powders, with some carminative water, should be administered both to the nurse and infant : and for their drink, gelatinous decoctions of the harts-horn and correcting emulsions. To discharge the flatulencies, gentle carminative and emollient clysters should be given : an outward application of paregorics is likewise very beneficial.

After the fit, in order to remove the fomes of the distemper, not only the nurse, but also the infant ought to be gently freed from the fordes lodged in the stomach and intestines, not omitting at the same time

the use of corroborating and stomachic medicines.

To cure the ischury or retention of urine in children, the nurse, while she gives suck, and the infant, when weaned, must avoid all improper aliments and unwholesome drinks : but if the disorder be supported by an obstructed evacuation by stool, resins impregnated with rhubarb should be taken in proper aliments, or clysters should be duly injected. When the discharge of urine is suppressed by calculous fragments obstructing the urethra, emollient clysters are in like manner of service. Internally antispasmodics should be administered ; and externally baths, in which emollient substances have been boiled, are highly beneficial : as also bags fitted with the same things applied warm to the region of the pubes, the anointing which with the oil of scorpions is also productive of happy effects.

For the cure of a cough and asthma in infants, absorbent powders, the root of Florentine orris, spermaceti, and sugar-candy, internally exhibited, are highly beneficial, and all the methods used whereby transpiration may not only be promoted, but a resolution of the inspissated fluids commodiously obtained.

If an asthma attended with a cough, proceed from acid and viscid crudities in the stomach, a mild emetic is often successful, and this end is likewise very well answered by emollient and carminative clysters. If a repelled, acrid, and excrementitious matter give birth to the disorder, besides internal diaphoretics, gentle vesicatories, applied to the nape of the neck, often produce a happy effect.

For ulcerous tubercles and catarrhus de fluxions, such infusions should be exhibited to the nurse as dilute the blood and lymph ; the infant should have laxatives administered. Inflammations of the parotid glands are, besides the internal use of resolvents, to be treated externally with the simple diachylon plaster mixed with camphire ; and, if the tumor cannot be discussed, it is to be maturated by emollient cataplasms.

As to the cure of hiccups and vomitings in infants, if milk taken plentifully offend, its quantity ought to be lessened ; but if the disorder proceed from its depraved quality, we ought to procure a proper excretion of it both from the nurse and infant.

As to costiveness in children, the nurse should use a light and resolving diet, exhibiting, at intervals, currants, either in the form of an electuary, with rhubarb and

I N F

and sugar, or boiled with apples. But the infant is relieved either by syrup of suc-cory with rhubarb, and a few grains of white mechoacan at proper intervals, or clysters of a decoction of oats with honey and butter, or of whey and Venice sope. The navel should also be anointed with oil of sweet almonds, mixed with a due quan-tity of the trochisci alhandal, reduced to powder.

A diarrhœa, or excessive flux, ought not to be suddenly checked, especially if chil-dren bear it well, and if its suppression be not indicated as proper. But when this happens, we must have a regard to the nurse's milk, and if she lay a foundation for the distemper, she must be changed, using at the same time a proper ptisan. The disordered infant may be relieved by taking internally powders of Armenian bole and crabs-eyes, with a few grains of the bark of cascarilla, to which may be added, as circumstances require, amber and a third part of the theriaca coelestis for a dose; and externally the belly is to be anointed with a proper liniment. And besides these, in such a state of the disease, great advantages accrue from the use of clysters. *Hoffman.*

INFANT, in law, a person under the age of one-and-twenty.

INFANTE, and **INFANTA**, all the sons and daughters of the kings of Spain and Portugal, except the eldest; the princes being called infants, and the prin-cesses infantas.

INFANTRY, in military affairs, de-notes the whole body of foot soldiers.

INFECTION, among physicians, the same with contagion. See *Contagion*.

INFINITE, that which has neither beginning nor end: in which sense God alone is infinite. See the article *God*.

Infinite is also used to signify that which has had a beginning, but will have no end, as angels and human souls. This makes what the schoolmen call *infinitum a parte post*; as on the contrary, by *infinitum a parte ante*, they mean that which has an end but had no beginning.

INFINITE, in mathematics, are such quantities as are either greater or smaller than any assignable one, being the same with indefinite or indeterminate, to which no certain limits are prescribed.

INFINITE Series. See *Series*.

INFIRMARY, a kind of hospital, where the weak and sickly are properly taken care of. See *Hospital*.

INFLAMMABILITY, that property

I N F

of bodies which disposes them to kindle, or catch fire.

INFLAMMATION, in surgery and medicine, is defined to be a species of tu-mour, attended with a burning heat, pain, redness, resistance, and a continual pul-sation and pricking. See *Tumour*.

Inflammations are either external, be-ing such as fall properly under the busi-ness of surgery, and are cured by manual operations and topical remedies; or inter-nal, being such whose cure is to be ex-pected chiefly from the use of internal remedies.

General Division of external INFLAM-MATIONS. External inflammations, seat-ed in the common integuments, are gene-rally termed phlegmons; but when slighter, they are called furuncles. The inflam-mation which is not fixed deep, but only spreads superficially on the skin, is usually distinguished by the name of an erysipe-las; and the inflammatory tumour that arises at the finger-ends, is termed paro-nychia; when the inflammation fixes in the groin or armpits, the tumour is call-ed a bubo; when under the ears, parot-is. If an inflammation seizes the hands and feet from extreme cold, chilblains arise: other inflammations have also par-ticular names, according to the particular part of the body they possess.

General Causes of external INFLAM-MATIONS. The cause of a phlegmon, or an external inflammation, arises gene-rally from too thick or viscid a state of the blood, stagnating in the anastomoses of the smallest arteries and veins; so that the blood being sent in larger quantities than it can pass thro' those vessels, must of consequence excite the fore-mentioned ge-neral symptoms of an inflammation, and must occasion great disorders at every part where such stagnation is made. And though no part of the body, whether ex-ternal or internal, nor the bones them-selves, are exempt from this kind of in-flammation, yet it more frequently hap-pens in the fat and glands than any where else.

With regard to the cause whence that inspissation and stagnation in those vessels proceed, they are, according to Heister, of two kinds, of which the first may be called external, and the latter internal. Among the external causes are placed in the first rank all wounds, fractures, luxa-tions, contusions, punctures by thorns and splinters, with a too great compression of the vessels, whether by too strict a ban-dage,

Wage, or otherwise. To these causes may be added burns of all sorts, extreme cold, too violent a motion of the body, the external or internal application of too sharp and stimulating substances, sticking plasters, oily and fat things, with abundance of the like nature, which stop up the pores of the skin, and impede the free course of the blood.

Among the internal causes, the same author reckons any thing acrimonious in the fluids, as in the scurvy; as also from the blood's abounding in too great quantities, or being of too thick a consistence; or lastly, when it circulates in the body with too violent a motion: for by this means the grosser particles of the blood are drove, and, as it were, wedged into smaller vessels, than they can readily find a passage through, and this, more especially, when a sudden cold is spread over a body that is in a great heat. In short, every thing will produce an obstruction which makes the parts of the blood too gross and bulky, or too much contracts the mouths of the small vessels.

General Crises and Cure of INFLAMMATIONS. Inflammations terminate variously, according to their different degrees of violence, the causes from whence they arise, the parts which they affect, and the particular constitution of the patient, with several other circumstances which also preface to us what shall be the end of the inflammation. But the several ways wherein an inflammation terminates are chiefly four. It is either, 1. so dispersed and resolved as to vanish without leaving any considerable injury in the part affected, and which afterwards recovers its former vigour, and is, of all others, the best course it can take; or else, 2. the inflammation suppurates, and degenerates into an abscess, so as to leave ever after some damage in the organ; or else, 3. the inflammation degenerates into a gangrene, or sphacelous; or lastly, into a hard tumour, commonly called a scirrhus, which grows more compact in the part affected, as the inflammation remits or goes off.

INFLAMMATION in the Breasts, a disorder most incident to child-bearing women, and almost constantly happens in a few days after their delivery.

If the milk should be propelled too plentifully and forcibly into the breast, which at such times frequently happens; and if the mother should then be seized with cold, fear, anger, or a sudden per-

turbation of mind, the sanguiferous and lactiferous vessels being thence obstructed, the breasts must then become inevitably tumified, which will be attended with great heat, redness, resistance, and violent pain. The same accident often happens to women that give suck even a long time after their lying in, and is sometimes the case of those who have no milk, all proceeding from the causes already mentioned; and Heister gives us an instance of a man's breast being inflamed by means of a great fright. These inflammations do not, according to that author, always happen to be equally intense and violent; for sometimes it seizes the whole breast; sometimes only one side; and at other times occupies only a small part of the breast: sometimes the inflammation lies very near the skin; at other times very deep; and at one time it has urgent symptoms, and at another it sits easy on the part.

This disorder may be speedily removed in women of condition, and such as do not suckle their children, if some of the plaster of spermaceti spread on linen be applied warm all round the breast soon after parturition; being perforated in the middle, to transmit the papilla or nipple; the accession of the milk being also repelled by a very strait bandage. Among the internal remedies, the most proper are such as bring down the lochia puerperarum, when they do not flow in sufficient plenty of themselves: the principal remedies for this purpose are, the essence of myrrh, amber, the essence of saffron, elixir proprietatis, &c. Lastly, with respect to the proper drink, it must be carefully observed to diminish the quantity of milk by the smallness and poverty of the meat and drink, upon which account the patient should be recommended to drink small broth, tea, or the like watery liquors: and if the mother be desirous of suckling the infant, there can be no better preservative against the inflammations of the breasts. But when the inflammation is fixed, the cure must be attempted either by dispersion or suppuration, for the method of which see *Dispersion* and *Suppuration*.

But if it happens that the tumour will neither yield to dispersion nor suppuration, and is in danger of turning to a scirrhus, or cancer, the patient must be kept in good spirits, and the plaster of spermaceti be constantly retained on the tumour, by which

means it will probably either grow less, or else vanish.

INFLAMMATION of the Bladder, that attended with an acute, burning, pressing pain, in the region of the pubes, a fever, and a continual tenesmus, or desire of going to stool, and a perpetual striving to make water.

Other symptoms of this disease are, a rumbling of the bowels, griping pains, great anxiety of the præcordia, difficult breathing, want of appetite, and vomiting, coldness of the extreme parts, a hard, quick, unequal, contracted pulse, inquietude, and sometimes convulsions. There is another kind which is more superficial, and is either rheumatic or erysipelatous, in which the fever is more easily and speedily cured, by promoting a diaphoresis; and persons in years, who are affected with the scurvy, gout, rheumatism, or violent head-achs, are most subject to it, especially if they catch cold from a north wind. The former arises commonly from the stoppage of the menses, bleeding piles, or other usual sanguinary evacuations, and not seldom from a virulent gonorrhœa, unskilfully suppressed by astringents; or when treated by medicines of too sharp and hot a nature.

This disease is mortal, if it terminates in an ulcer, or mortification: the latter is immediate death.

The cure must be attempted, says Hoffman, with bleeding in the foot, if a suppression of the menses or hæmorrhoidal flux be the cause. If it proceeds from the scurvy, &c. recourse must be had to gentle diaphoretics, diluents, and remedies which obtund the acrimony of the humours, such as decoctions of the root of scorzonera, china, skirrets, and fennel. Also infusions in the manner of tea of the tops of yarrow, flowers of mallows, winter-cherries, and seed of daucus, made with milk, and sweetened with syrup of marsh-mallows. To these may be added emulsions of the four cold seeds. If the patient is costive, manna will be proper with antimoniated nitre, to which rhubarb may be joined, as occasion requires. If the disease is violent, diaphoretic powders with nitre, in a larger proportion than ordinary, as also five grains of saffron, and two of camphire, with the emulsions aforesaid. External antispasmodics, and gentle discutients will be proper; for which purpose it was Hoffman's method to apply bladders, filled with the decoction of emollient flowers. If the tenes-

mus and difficulty of urine arise from spasms, there is nothing better than the vapours of a decoction in milk of the flowers of melilot, elder, chamomile and mallows, and the tops of yarrow. This decoction may be put into a close-stool, and the patient sit over it.

INFLAMMATION of the Intestines, according to Boerhaave, is an inflammation contracting the intestines, and stopping up the passage through them; attended with a vehement, fixed, burning pain, which is irritated by things taken inwardly. When the inflammation is in the upper part of the intestines, the stomach will be greatly distended with wind. When the pain is exasperated, it produces convulsions of the diaphragm and abdominal muscles, vomiting, and painful inflations, with rumblings and sharp griping pains, which may bring on the iliac passion, or twisting of the guts. Hoffman says, that when there is a burning pain in the abdomen, with a preternatural heat of the whole body, as also a quick pulse, loss of strength, anxiety and inquietude, the seat of the disease may justly be suspected to be in the intestines. If the pain is above the navel, and below the stomach, attended with a fever, nausea, and reaching, it is a sign that that part of the colon is affected which lies beneath the stomach, and is extended from the right to the left side. If the pain lies in the right hypochondrium, under the spurious ribs, it shews that part of the colon to be inflamed where it joins with the ilium. When the complaint is on the left side, under the loins, where the psoas muscle is placed, it is a sign that the colon, and that part of the mesentery joined thereto, is the seat of the disease, especially when it adheres to the peritonæum: but when the pain is in the middle of the abdomen about the navel, it shews the small guts are certainly affected; in all which cases the pain is supposed to be attended with a fever.

Arbuthnot advises, that this disease may be carefully distinguished from a colic, proceeding from a cold cause; because what is good for the latter is poison in the former. It must have a speedy remedy, or it will soon, according to that writer, end in the iliac passion, or a mortification. Besides copious bleeding, he thinks there is scarcely any other method of cure than fomenting and relaxing the bowels with emollient liquids taken warm, both by the mouth and in clysters, and this every hour;

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warm fomentations, or young, vigorous, and sound animals applied to the body, are extremely beneficial.

Boerhaave directs, that the patient should only be nourished with broth, in which gently detergent roots have been boiled.

After bleeding and clysters, if the pain continues violent, Hoffman is of opinion that there will be no manner of danger in giving opiates, by which means the excruciating pain will be alleviated, and the spasms appeased, and a breathing sweat will follow. When this is done, and the fever abated, there will be no occasion to continue the dilating, relaxing, and moistening medicines, but rather the nervous and corroborating; such as the preparations of amber, especially the salt and tincture; the former of which may be given in a bolus from six to sixteen grains, and the latter from twenty to eighty drops, in any convenient vehicle.

If the patient survives three days, and the acuteness of the pain abates with a chilliness and shivering throughout the body, it is a sign of a suppuration; and within fourteen days the imposthume will break, and if it falls into the cavity of the abdomen, it will corrupt the whole mass of fluids, putrefy the viscera, and turn to an ascites; whence the patient will die of a consumption. In this case Boerhaave and Arbuthnot recommend whey and chalybeate waters, as likely to prove most beneficial. The imposthume may also turn either to a gangrene or scirrhus, both which are mortal.

INFLAMMATION of the *Liver*.
When the liver is inflamed, it compresses the stomach, diaphragm, and the neighbouring viscera of the abdomen; it stops the circulation of the fluids, hinders the generation and excretion of the gall, and all digestion; it produces a great many bad symptoms, as the jaundice, with all the diseases depending thereon.

A fever, an inflammation, and pungent pain on the region of the liver, and diaphragm, a tension of the hypochondria, yellowness of the skin and eyes, and a saffron coloured urine, are signs of an inflammatory disposition of the liver.

This disease terminates as other inflammations ; being cured by resolution, concoction, and excretion, of the morbid matter ; or it terminates in abscess, scirrhus, or gangrene. See *Abscess*, &c.

INFLAMMATION of the Lungs. See *Peripneumony*.

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INFLAMMATION of the Pleura.
See Pleurisy.

INFLAMMATION *of the Stomach* is known by a burning, fixed, and pungent pain in the stomach, which is exasperated at the instant any thing is taken into it, and is succeeded by a most painful vomiting and hiccough. There is, besides an inward heat, anxiety, and a tensive pain about the præcordia, an acute continual fever, great thirst, difficult breathing, inquietude, tossing of the body, coldness of the extreme parts, a hard, contracted, quick, and sometimes unequal pulse. In the Medicinal Essays, we have an instance of this disease being attended with an hydrophobia. See *Hydrophobia*.

Boerhaave says, that this disease, if not suddenly cured, is generally mortal: therefore, that as soon as it is discovered; plentiful bleeding is necessary; that the patient's drink should be very soft, antiphlogistic, and emollient; and also that clysters of the same kind should be administered.

Arbuthnot advises, that the patient should totally abstain from every thing that has acrimony in it; even the cooling nitrous salt, which are beneficial in other inflammations, irritate too much. Vomits, cordials, and spirituous liquors, are little better than poison: milk generally curdles. Aliments must be given frequently, and by a spoonful at a time, for any distension increases the inflammation. A thin gruel of barley, oatmeal, whey, with a very little sugar, or honey, or chicken broths, are proper aliments: whey emulsions, barley-water, and emollient decoctions, are proper drinks. If poisons of the caustic kind or metallic medicines ill prepared cause the inflammation, oily fat things are proper, as new milk, cream, oil of sweet almonds, or oil of olives taken often and plentifully, according to Hoffman. If in the cholera morbus an inflammation is apprehended, he advises absorbents and burnt harts-horn, with gelatinous decoctions of calves and neat's feet, or harts-horn jellies, and water gruel. Outwardly he recommends the following liniment as useful in all cases: take oil of sweet almonds, two ounces; camphire, one dram; make a liniment, with which anoint frequently the præcordia, applying a hot linen-cloth over it. The following epithem he recommends as an excellent discutient and sudorific. Take of the vinegar of roses, two ounces; spirit of wine camphorated, two

3. D 2. drams;

drams; tincture of saffron, and tincture of castor, of each one dram; nitre, half a dram: let this epithem be applied warm to the region of the stomach. If there happens an imposthume, honey, and even honey of roses, taken inwardly, is, according to Arbuthnot, a good cleanser; and decoctions of comfrey-roots, healing.

INFLAMMATION of the *Womb* or *Uterus*, appears from extraordinary heat and a fixed pain in the groin, with an acute fever, a pain in the loins and belly, an inflation of the abdomen, a stimulus to make water and to go to stool, heat, and a difficult of urine.

Other symptoms, according to Astruc, are a tumour, pain, heat, tension of the hypogastric region, redness of the os uteri, and great heat of the vagina. If the fore part of the uterus is affected, there is a dysury; if the back part, a tenesmus; frequent faintings and cardialgia, a burning fever; or, if the inflammation is violent, a lypyria, in which the external parts or extremities are cold, and the internal burn, and the pulse is imperceptible; a delirium and phrensy, the breasts swell, in proportion as the inflamed uterus.

INFLAMMATORY DISEASES.

To these may be referred the several diseases mentioned in the preceding article, either attended with a fever, as lesser inflammation without a fever; besides all chronic disorders arising from inflammations, the chief of which are old coughs, consumptions, and the rheumatism, without a fever. See *Cough*.

INFLAMMATORY FEVERS are distinguished into two stages; the first, whilst the pulse continues hard, in which it is proper to bleed; the second, when the inflammatory symptoms still remaining, the pulse is too low for that evacuation; in this state blisters are the chief remedy, and which, except in a few singular cases, are not to be used sooner. If the blisters are large, it is better to apply them gradually than many at a time.

INFLECTION, in grammar, the variation of nouns and verbs, by declension and conjugation. See *Declension* and *Conjugation*.

INFLUENCE, a quality supposed to flow from the heavenly bodies, either with their light or heat; to which astrologers idly ascribe all sublunary events.

INFORMATION, in law, is nearly the same in the crown-office, as what in our other courts is called a declaration. It is sometimes brought by the king, or his at-

torney-general, or the clerk of the crown office; and at other times by a private person, who informs or sues, as well for the king as himself, upon the breach of some popular statute, in which a penalty is given to the party that will sue for it. It differs from an indictment, which must be found by the oaths of ten men at least; for an information is only the allegation of the person that brings it.

INFORMER, a person that informs against or prosecutes another, upon any penal statute.

INFUNDIBULIFORM, in botany, an appellation given to such monopetalous or one-leaved flowers, as resemble a funnel in shape, or which have a narrow tube at one end, and gradually widen towards the limb or mouth. There are two kinds of infundibuliform, or funnel-fashioned flowers; one of which is like an inverted hollow cone, and the other somewhat like a saucer, and thence called hypocrateriform.

INFUSION, in pharmacy, a method of obtaining the virtues of plants, roots, &c. by steeping them in a hot or cold liquid.

INGLUVIES, the crop or craw of granivorous birds, serving for the immediate reception of the food, where it is macerated for some time, before it is transmitted to the true stomach.

INGOT, a mass of gold or silver, melted down and cast in a mould, but not coined or wrought.

INGREDIENTS, in pharmacy, whatever simple medicines enter the composition of a compound one.

INGRESS, in astronomy, signifies the sun's entering the first scruple of one of the four cardinal signs, especially Aries.

INGRESS, **EGRESS**, and **REGRESS**, in law, words frequently used in leases of lands, which signify a free entry into, a going out of, and returning from some part of the premises leased to another.

INGROSSER, one who buys up great quantities of any commodity, before it comes to market, in order to raise the price.

INGROSSER, a clerk or person who copies records, deeds, or other instruments of law, on skins of parchment.

INGUEN, in anatomy, the same with what is otherwise called groin, or pubes.

INGUINAL, in anatomy, &c. any thing belonging to the groin. Hence,

INGUINAL HERNIA is a hernia in that part, called by surgeons bubonocèle.

INHE-

INHERITANCE, a perpetual right or interest in lands, invested in a person and his heirs.

INHIBITION, a writ to forbid a judge's proceeding in a cause that lies before him.

INHUMATION, in chemistry, a method of digesting substances by burying the vessel, in which they are contained, in horse-dung or earth.

INJECTION, in surgery, the forcibly throwing certain liquid medicines into the body by means of a syringe, tube, clyster-pipe, or the like. Many disorders are very difficultly, if at all curable, unless some proper liquid be injected into the parts affected; which is performed by drawing the liquor into the syringe, and forcing it out again into the disordered parts. In doing this, one caution is extremely necessary, viz. to apply the instrument very carefully, and to be mindful that the liquor you inject be not too hot or cold.

Anatomical **INJECTION**, the filling the vessels with some coloured substance, in order to make their figures and ramifications visible.

INITIATED, in antiquity, a term chiefly used in speaking of persons who were admitted to a participation of the sacred mysteries among the heathens.

INJUNCTION, in law, is a writ or kind of prohibition granted in several cases; and for the most part grounded on an interlocutory order or decree, made in the court of chancery or exchequer, for staying proceedings either in courts of law, or ecclesiastical courts.

INJURY, any wrong done to a man's person, reputation, or goods.

INK, *Atramentum*, a black liquor generally made of an infusion of galls, copperas, and a little gum-arabic.

Composition of common Black INK.—“Take one gallon of soft water, and pour it boiling hot on one pound of powdered galls, put into a proper vessel; stop the mouth of the vessel; and set it in the sun in summer, or in winter where it may be warmed by any fire; and let it stand two or three days. Add then half a pound of green vitriol powdered; and having stirred the mixture well together with a wooden spatula, let it stand again for two or three days, repeating the stirring; when add further to it five ounces of gum-arabic dissolved in a quart of boiling water; and, lastly, two ounces of alum; after which the ink should be strained through a coarse linen cloth for use.”

The galls should be good, or the ink will fail; as it very frequently does from an error in this point. The marks of their goodness is, the appearing of a bluish colour, and feeling heavy. Where they are light in weight, and of a whitish brown colour, without any blue, they should be rejected; or a greater proportion should be used.

Improved Composition of Black-writing INK.—“Take a gallon of soft water; and boil it in a pound of chips of logwood for about half an hour. Take the decoction when off the fire, and pour it from the chips while boiling hot on a pound of the best Aleppo galls beaten to a powder, and two ounces of pomegranate peels, being put into a proper vessel. After having stirred them well together with a wooden spatula for some time, place it in the sunshine in summer, or within the warmth of any fire if in winter, for three or four days, stirring the mixture again as often as may be convenient. At the end of that time add half a pound of green vitriol powdered; and let the mixture remain four or five days more, stirring it as frequently as may be necessary: and then add further four ounces of gum-arabic dissolved in a quart of boiling water; and after giving the ink some time to settle, strain it off from the dregs, through a coarse linen cloth; and keep it well stopped for use.”

If the ink be desired to shine more, the proportion of the pomegranate peel must be increased; and in the country, where the logwood cannot be so easily procured, a pound of the ripe privet berries may be substituted for it.

In order to secure this ink from growing mouldy, a quarter of a pint or more of spirit of wine may be added: but to prevent its containing any acid, which may injure the ink, a little salt of tartar or pearl-ashes should be added previously, and the spirit poured off from it; which will render it innocent with regard to the colour of the ink.

Preparation of a powder for forming good Black INK extemporaneously by the addition of Water.—“Infuse a pound of galls powdered, and three ounces of pomegranate peels, in a gallon of soft water for a week, in a gentle heat; and then strain off the fluid through a coarse linen cloth: add then to it eight ounces of vitriol dissolved in a quart of water, and let them remain for a day or two; preparing in the meantime a decoction of logwood, by boiling a pound

I N K

a pound of the chips in a gallon of water, till one third be wasted ; and then straining the remaining fluid while it is hot. Mix the decoction and the solution of galls and vitriol together ; and add five ounces of gum-arabic ; and then evaporate the mixture over a common fire, to about two quarts ; when the remaining fluid must be put into a proper vessel for that purpose, and reduced to dryness in *balneo mariæ* ; that is, by hanging the vessel in boiling water.

The mass left, after the fluid is wholly exhaled, must be well powdered ; and when wanted for use, may be converted into ink by the addition of water."

Preparation of Red-writing I N K. —

"Take of the raspings of Brazil-wood a quarter of a pound ; and infuse them two or three days in vinegar, which should be colourless, where it can be so procured. Boil the infusion then an hour over a gentle fire ; and afterwards filter it, while hot, through paper, laid in an earthen cullender. Put it again over the fire, and dissolve in it, first half an ounce of gum-arabic ; and afterwards of alum, and white sugar, each half an ounce."

When Brazil-wood is wanted for purposes like this, the best way is to preserve it in pieces ; and to scrape it with a knife, or rasp it with a very bright file ; but all rust of iron must be carefully avoided, by which means all possibility of sophistication is of course prevented.

Preparation of Red INK from Vermilion.

"Take the glair of four eggs, a tea-spoonful of white sugar or sugar-candy beaten to powder, and as much spirit of wine ; and beat them together till they be of the consistence of oil : then add such a proportion of vermilion as will produce a red colour, sufficiently strong ; and keep the mixture in a small phial, or well stopped ink bottle for use. The composition should be well shaken together before it be used."

Instead of the glair of eggs, gum-water is frequently used : but thin size made of isinglass with a little honey, is much better for the purpose.

Preparation of Black-printing INK for engraving on Copper, or other nice purposes.

"Take any quantity of the best nut oil, and put it into an iron pot with a cover well fitted to it ; of which pot it must fill only two thirds. Place it on a fire, and put on the cover till it makes an ebullition ; when it must be very well stirred to prevent its boiling over. Suffer it then to catch fire, or kindle it by a lighted paper ;

I N K

and when it flames, take it from the fire, and place it in a corner of the chimney ; where let it continue to burn half an hour ; frequently stirring it. Extinguish then the flames, by putting the cover on the pot ; or if that be not effectual, by putting a wet cloth over it. This produces the weak oil which has the principal part in the composition of the ink ; but a strong oil must also be prepared by the same means, only instead of extinguishing the flame at the end of half an hour, it must be continued till the oil be rendered very thick and glutinous, which must be examined by taking a little out of the pot, and suffering it to cool ; when, if it be found to be extremely adhesive and ropy, so as to be drawn out in long threads, it is sufficiently burnt ; and the flame must be put out. This is the strong oil, of which a proportion is to be used along with the other in the printing ink. Having prepared these oils, take half a pound of the Francfort, or any other good black ; and grind it with the addition of only so much of the weak oil as is necessary to make it work on the stone, which will be generally something less than half the weight. The whole being incorporated together, and afterwards thoroughly well mixed by a second grinding, having only a small quantity on the stone at a time, a quantity of the strong oil must be added ; which may be as much as is equal to the size of a small hen's egg. It will then be fit for use ; and must be put into a proper pot, and covered with paper or leather."

Instead of Francfort, or other black commonly used, the following composition may be substituted ; and will form a much deeper and more beautiful black than can be obtained by any other method.

"Take of the deepest Prussian blue five parts, and of the deepest coloured lake and brown pink, each one part. Grind them well with oil of turpentine : and afterwards with the strong and weak oils in the manner and proportion before directed."

The colours need not be bright for this purpose ; but they should be the deepest of the kind, and perfectly transparent in oil, as the whole effect depends on that quality.

Secret or Sympathetic INK. — A great variety of methods have been invented for making secret letters ; but the most common are to write with a colourless fluid, which may be made to assume the quality of ink, either by embrocating or moistening the paper containing the writing with some other fluid ; or by putting it into a gentle

gentle heat; or by immersing it in water: but many other expedients may be found for forming invisible letters, which may be occasionally rendered legible, by applying the proper means.

Invisible letters, which may occasionally be rendered apparent, by holding the paper on which they are written to the fire, may be made by writing with the juice of lemons, or of onions; or with sal ammoniac finely powdered and tempered with water, or by the fluid which may be pressed from the mixture of onion, urine, and salt, ground together till they become of an unctuous consistence.

Indian INK is a black pigment brought hither from China, which on being rubbed with water, dissolves, and forms a substance resembling ink; but of a consistence extremely well adapted to the working with a pencil: on which account it is not only much used as a black colour in miniature painting, but is the black now generally made use of for all smaller drawings in *chiaro oscuro*, or where the effect is to be produced from light and shade only.

The preparation of Indian ink, as well as of the other compositions used by the Chinese as paints, is not hitherto revealed on any good authority. A substance much of the same nature, and applicable to the same purposes, may be formed in the following manner:

“Take of isinglass six ounces, reduce it to a size, by dissolving it over the fire in double its weight of water. Take then of Spanish liquorice one ounce; and dissolve it also in double its weight of water; and grind up with it an ounce of ivory black: add this mixture to the size while hot; and stir the whole together, till all the ingredients be thoroughly incorporated: then evaporate away the water in *balneo maris*, and cast the remaining composition into leaden moulds greased; or make it up in any other mould.”

The colour of this composition will be equally good with that of the Indian ink: the isinglass size, mixed with the colours, works with the pencil equally well with the Indian ink: and the Spanish liquorice will both render it easily dissolvable on the rubbing with water, to which the isinglass alone is somewhat reluctant; and also prevent its cracking and peeling off from the ground on which it is laid.

INLAYING, the art of marquetry. See *Marquetry*.

INNATE IDEAS, those supposed to

be stamped on the mind, from the first moment of its existence, and which it constantly brings into the world with it: a doctrine which Mr. Locke has abundantly refuted. See the article *Idea*.

INNOCENTS DAY, a festival of the Christian church, observed on December twenty-eight, in memory of the massacre of the innocent children by the command of Herod, king of Judea.

INNOMINATA OSSA, in anatomy, three bones, which compose the extreme part of the trunk of a human body. These, though single in adults, are in infants three perfectly distinct bones, each of which has its peculiar name; the upper one is called the ileum; the anterior one, the os pubis, or os pectinis; and the posterior one, the os pubis, or os ischium.

The use of these bones are to support and sustain the spina dorsi, and indeed all the parts above themselves; to make a firm and proper juncture of the other parts of the body with the thigh; to serve for the place of origin to several muscles; to form the cavity of the pelvis, and to defend its contents from external injuries.

INOCULATION, in medicine, the art of transplanting a distemper from one subject to another, by incision, particularly used for engrafting the small-pox. See the article *Pox*.

The design of this operation is to communicate by art a milder species of the small-pox to the infant or adult patient, than that received by the natural infection; and this by engrafting some of the variolous matter, in order to which a small incision is to be first made, with a scalpel or lancet, through the skin of the arm; and having inserted a small particle of the purulent matter, taken from a mild kind of the pock, the little wound is then to be dressed with some dry lint, and covered with a plaster. After the operation, the patient must constantly keep his chamber, the air of which should be moderately warm, and his diet regulated by some prudent physician, by which means this disorder will shew itself in seven or eight days, without any malignant symptoms; and if assisted by a proper regimen, and a moderate warmth, it usually runs gently through its several stages. When the patient has once had the disorder this way, though ever so mild, it is certain, from experience, that they never have it again; and therefore the opinion of those seems to be well grounded, who think that the propagation of the small-pox by inoculation

tion might be of general use and benefit to mankind, in preserving the lives of some, and the most important members of others, as the face, eyes, hearing, viscera, &c.

INOCULATION, or **BUDDING**, in gardening, is commonly practised upon all sorts of stone-fruit, as nectarines, peaches, apricots, plums, cherries, as also upon oranges and jasmines; and, indeed, this is preferable to any sort of grafting for most sorts of fruit. The method of performing it is as follows: you must be provided with a sharp penknife with a flat haft, which is to raise the bark of the stock, to admit the bud; and some sound bass mat, which should be soaked in water, to increase its strength, and render it more pliable; then having taken off the cuttings from the trees you would propagate, you must choose a smooth part of the stock, about five or six inches above the surface of the ground, if designed for dwarfs; but if for standards, they should be budded six feet above ground. Then with your knife make an horizontal cut across the rind of the stock, and from the middle of that cut make a slit downwards, about two inches in length, so that it may be in the form of a T; but you must be careful not to cut too deep, lest you wound the stock; then having cut off the leaf from the bud, leaving the foot stalk remaining, you should make a cross cut, about half an inch below the eye, and with your knife slit off the bud, with part of the wood to it: this done, you must with your knife pull off that part of the wood which was taken with the bud, observing whether the eye of the bud be left to it or not; for all those buds which lose their eyes in stripping, are good for nothing; then having gently raised the bark of the stock with the flat haft of your penknife clear to the wood, thrust the bud therein, observing to place it smooth between the rind and wood of the stock, cutting off any part of the rind belonging to the bud, that may be too long for the slit made in the stock; and so having exactly fitted the bud to the stock, tie them closely round with bass mats, beginning at the upper part of the slit, and so proceeding to the top, taking care not to bind round the eye of the bud, which should be left open.

When your buds have been inoculated three weeks or a month, those which are fresh and plump, you may be sure are joined; and at this time you should loosen

the bandage, which if it be not done in time, will injure if not destroy the bud. The March following cut off the stock sloping, about three inches above the bud, and to what is left fasten the shoot which proceeds from the bud: but this must continue no longer than one year; after which the stock must be cut off close above the bud. The time for inoculating is from the middle of June to the middle of August; but the most general rule is, when you observe the buds formed at the extremity of the same year's shoot, which is a sign of their having finished their spring growth. The first sort commonly inoculated is the apricot, and the last the orange-tree, which should never be done till the latter end of August: and in doing this work, you should always make choice of cloudy weather; for if it be done in the middle of the day, when the weather is hot, the shoots will perspire so fast, as to leave the buds destitute of moisture.

INQUEST, in law, signifies an enquiry made by a jury, in a civil or criminal cause, by examining witnesses. See the article *Jury*.

INQUIRENDO, in law, an authority given to one or more persons, to enquire into something for the advantage of the king.

INQUISITION, in law, a manner of proceeding by way of search or examination used on the king's behalf, in cases of out-lawry, treason, felony, self-murder, &c. to discover lands, goods; and the like, forfeited to the crown.

INQUISITION, in the church of Rome, a tribunal in several Roman-catholic countries; erected by the popes for the examination and punishment of heretics.

This court was founded in the twelfth century by father Dominic and his followers, who were sent by pope Innocent III. with orders to excite the Catholic princes and people to extirpate heretics, to search into their number and quality, and to transmit a faithful account thereof to Rome. Hence they were called inquisitors; and this gave birth to the formidable tribunal of the inquisition, which was received in all Italy, and the dominions of Spain, except the kingdom of Naples and the Low-Countries.

This diabolical tribunal takes cognizance of heresy, judaism, mahometanism, sodomy, and polygamy; and the people stand in so much fear of it, that parents deliver

deliver up their children, husbands their wives, and masters their servants, to its officers, without daring in the least to murmur. The prisoners are kept for a long time, till they themselves turn their own accusers, and declare the cause of their imprisonment; for they are neither told their crime, nor confronted with witnesses. As soon as they are imprisoned, their friends go into mourning, and speak of them as dead, not daring to solicit their pardon, lest they should be brought in as accomplices. When there is no shadow of proof against the pretended criminal, he is discharged, after suffering the most cruel tortures, a tedious and dreadful imprisonment, and the loss of the greatest part of his effects. The sentence against the prisoners is pronounced publicly, and with extraordinary solemnity. In Portugal they erect a theatre capable of holding three thousand persons, in which they place a rich altar, and raise seats on each side in the form of an amphitheatre. There the prisoners are placed, and over-against them is a high chair, whither they are called, one by one, to hear their doom, from one of the inquisitors.

These unhappy people know what they are to suffer, by the cloaths they wear that day. Those who appear in their own cloaths, are discharged, upon payment of a fine: those who have a *santo benito*, or strait yellow coat without sleeves, charged with St. Andrew's cross, have their lives, but forfeit all their effects: those who have the resemblance of flames, made of red serge, sewed upon their *santo benito*, without any cross, are pardoned, but threatened to be burnt if ever they relapse: but those who, besides these flames, have on their *santo benito*, their own picture, surrounded with figures of devils, are condemned to expire in the flames. The inquisitors, who are ecclesiastics, do not pronounce the sentence of death; but form and read an act, in which they say, that the criminal being convicted of such a crime, by his own confession, is with much reluctance delivered to the secular power, to be punished according to his demerits: and this writing they give to the seven judges, who attend at the right side of the altar, who immediately pass sentence. For the conclusion of this horrid scene, see the article *Act of Faith*.

INQUISITORS, in law, persons who have power by their office to make inquiry

in certain cases; as sheriffs, and coroners on view of the body, &c.

INROLLMENT, in law, is registering any lawful act, as a statute or recognizance acknowledged, a deed of bargain and sale, &c. in the rolls of chancery, king's bench, common pleas, or exchequer, at the hustings of Guildhall, London, or at the quarter-sessions.

INSCRIBED, in geometry. A figure is said to be inscribed in another, when all its angles touch the sides or planes of the other figure.

INSCRIPTION, a title or writing carved, engraved, or affixed to any thing, to give a more distinct knowledge of it, or to transmit some important truth to posterity.

INSECTS, *Insecta*, in natural history, a smaller kind of animals, that commonly are exsanguinous.

The word is Latin, and derived from *in*, and *seco*, to cut, because in some insects, as ants, the body seems divided into two; or because the bodies of several of them, as worms, &c. consist of divers rings, which are a sort of incisure.

Mr. Ray, in his *Methodus Insectorum*, divides insects into such as do not change their form; and into such as really do.

Insects which do not change their form, are either without feet, or with feet: and of these there are some kinds that cast their skins, and others that do not.

Insects without feet, are either terrestrial or aquatic. The terrestrial are such as are produced on the earth, as the *lumbrici terrestres*, which are either of the larger sort, and called dew-worms, or of a smaller size; and of these there are some red, and others green with yellow tails; which last are commonly called gilt-tails: or, secondly, such as are found in the bowels of animals, of which some are found in the intestines of men, as the *lumbrici teretes*. 2. The *lumbrici lati*, which are also called *tæniæ*. 3. *Cucurbitini*, which some take to be only fragments of the *tæniæ*. 4. *Ascarides*, which are chiefly found in the rectum. Others are found in the intestines of beasts, which are of two sorts; the *oblongi* and *pellucidi*, of the thickness of a horse-hair, and therefore called *vermiculi fetiformes*: and the *brèves* and *crassiores*, which are found in horses, and called the *botts*.

To the genus of terrestrial insects many refer snails, whether with or without shells.

Aquatic insects without feet, that do not change their form, are either, 1. Of the larger sort, that, by fixing their heads to the ground, draw up their tails towards them, &c. Of these some are round and smooth, and are of three sorts, as the medicinal hirundines or leeches, the common black horse-leeches, and the ash-coloured sea-leeches; but there is also a smaller, and flatter kind that stick to the stones in the bottom of small brooks. Or of the lesser sort that move differently from the former; these are also either round or flat; of the round sort there is one that is black with two small horns on its head, found sticking to wet stones on the tops of the hills; and another that is red, about a finger's length, with a forceps at the tail, found at the bottom of fish-ponds and stagnant waters. The flat sort are very small and thin, and called flukes, being sometimes found in waters, and sometimes in the branches of the porus biliaris in sheep.

Insects that do not change form, and have feet, are, 1. Those with six feet. 2. Those with eight feet. 3. Those with fourteen feet; and, 4. Those with many feet.

Those of six feet are terrestrial or aquatic: the terrestrial are either of a larger kind, as, 1. The yellowish insect found in decaying oaks. 2. The black one on the ground, called vermivorous by Mouffet. 3. The black one living under ground, with a forceps at the tail. 4. A white sort with square black spots on its back. 5. The farinarium, that is bred in meal, of a whitish colour. Or, secondly, a smaller sort, some of which are found about the bodies of animals; as, 1. The cimetex, bug, or wall-louse, of a stinking smell. 2. Ricinus, the tick. 3. Pediculus, the common louse. 4. Pediculus, the ferus seu inguinalis, the crab-louse. 5. Pulex, the flea, of which there are various kinds. Others are not found on the bodies of animals; as, 1. One that resembles a common louse in bigness and figure, but is very nimble, and found in books and rotten paper. 2. Another with a very long body and a forcipital tail. 3. The black insect found often in the flowers of the chelidonium. 4. A subterraneous sort, a little whitish. 5. One that skips like a grass-hopper, but much less.

The aquatic are, 1. The pediculus marinus grandis, which adheres to fishes. 2. The squilla fluviatilis, with a pyra-

midal tail, and two hairs or bristles at the end.

Insects that do not change form with eight feet, either have a tail, as the scorpion, or are without; as, 1. The spider; of which some spin no web, have but two eyes, and very long legs, as the opilio or shepherd: others spin a web; and of these they reckon three sorts; 1. The aranea colcestrensis abdomine tumido, subrotundo, et elato. 2. The spider, with the thorax or middle part of the body as big as the abdomen. 3. The spider, with the long abdomen, found among reeds, rushes, grass, &c. Secondly, the ticks with eight feet, of which some are more flat, as the rambling ticks that run over the bodies of animals, but do not fasten; and some more round and thick, which adhere to the skin. Thirdly, the syrone, or mites. Insects that do not change form, and with fourteen feet, are the aselli, of which there are three sorts; as, 1. The sea asellus, the longest and largest of all, living among the rocks. 2. Asellus lividus, which rolls itself up into a ball. The common wood-lice, sows, or chiefs-bugs. 3. Asellus asininus with a forked tail, not rolling itself up. To these species may likewise be added, 1. The asellus marinus figuræ breviores, rolling itself up. 2. Asellus aquarum dulcium, with long legs and two bristles on its tail. 3. Pulex aquaticus, both in fresh and salt water. 4. Pediculus aquaticus, which fastens upon fish.

Insects that do not change form, and with twenty-four feet, have the eight forefeet lesser, and the sixteen hinder ones larger: there are two kinds of them, both with long bodies; the one larger, and of a dark colour, among the rocks by the sea side; the other of a silver colour, found in houses.

There is a kind with thirty feet, of an oblong shape, chestnut colour, and full flattish body, usually lying under logs and trunks of trees; it is very agile.

Insects that do not change form, and have many feet, are some on land, and either roundish in body, with all their legs rising out of the middle of the belly nearly, as the julus; or more flat, with their legs not rising as before from a point in the middle of their body, but growing along on the sides, as the scolopendra. Others are aquatic, of which Mr. Ray makes three differences: 1. The Cornish lugs, used as a bait for catching fish, with thirty-eight legs, and a smooth roundish

roundish body. 2. The scolopendra marina corpore plano. 3. The animalculum bicorpor, or rather bicaudatum, lying in the clefts of stones under salt water.

Insects which undergo a change, are improperly so denominated, as Swammerdam shews that there is only an explication of the parts of the animal, latent both in miniature, like the plant in the seed, and an increase of all the parts by proper degrees. The first species of transmutation is instantaneous. The insects of this order do not lose their motion at the time they shift their pellicles, at least not to appearance. This is when the vermiculus, leaving the former shape of the nymphæ, with which it appeared in the egg, and subsisted without food, now beginning to feed, has its parts visibly stretched out, and takes the form of a new nymphæ, which is not without motion, and from thence becomes a flying insect. Of this sort are, 1. The libellæ, or perlæ, which are produced from an insect of six feet, and which Moutset takes for the pulex marinus, or locusta aquatica. Out of the crustaceous husk of this insect, the libella breaks by a fissure which begins between the eyes, and is continued to the roots of the wings, and is there joined to the lateral fissures. 2. The cimices silvestres, whose characteristics, according to Willughby, are, 1. A long proboscis, not spiral but straight. 2. Their upper wings to the middle are thick and like leather, and thence to the extremities thin and membranous. 3. The figure of St. Andrew's cross on the back. 4. The locusta, which Willughby refers to those insects that are not transformed. 5. The grylli campestris. 6. Grylli domestici or crickets. 7. Gryllo-talpa, the mole-cricket. 8. Cicada or grasshopper. 9. Blatta, according to Swammerdam. 10. Tipulæ aquaticæ, which run swiftly on the surface of the water, and have a sting in their mouths, like the ticks or cimices. 11. Scorpis aquaticus, with a sting in its mouth. 12. Muscæ aquaticæ, which Aldrovandus calls apes amphibicæ. 13. Hemerobius or ephemera, or diaria of Swammerdam. 14. The forficula or auricularia.

The second species of transmutation includes such insects as undergo a double metamorphosis. 1. Into a chrysalis, or something analogous thereto. 2. A flying insect.

These insects, a while before they change, lie quite still, and, with regard

to their wings, are vaginipennia, as the scarabæi or beetles. Secondly, those whose wings are open, and these are either farinaceous, as the papilionæ, &c. or membranous, as the apes, muscæ, &c. and these are either with two wings or with four. The scarabæi may be divided, 1. In respect of their horns, into the nasicornis, bucerota, and cervus volans or taurus. 2. In respect of their antennæ, which are of divers kinds, of which the most considerable are the capricorni. 3. With regard to their motion, as the saltatrices. 4. With respect to their colour, as the cantharides.

To the beetle kind may likewise be referred the cicindela or glow-worm; the staphylius; the proscarabæus or oil-beetle, as, upon squeezing, a kind of oil is emitted from its joints: the anelytra with mealy wings, called papilionæ, butterflies; and these are either diurnal or nocturnal: the characteristic of the diurnal is, that they always settle with their wings erect, are produced from an angular aurelia, and have their antennæ studded; of these there are about fifty sorts observed in England. The nocturnal butterflies or phalænæ are very numerous, and cannot be clearly methodized: but they may be divided into, 1. Geometrigenæ, which come from an eruca called geometra, from the manner of its walking, which is angustinous, by curling up its back like the handle of a cup, with eight or ten feet. 2. Such as come from erucæ with fourteen feet: of this kind, which is very numerous, there hath been distinguished the phalæna fasciata, whose wings are in areas of divers colours; phalæna lineata, whose wings are marked with transverse lines; phalæna punctata, whose wings are marked with points; and, except these, all the others are distinguished into greater, lesser, and of a middling size. One of the larger kinds may be distinguished likewise by their inner wings running out beyond the upper, when they rest; and another by the appearance of eyes upon the wings; and a third by their long nails and narrow sharp wings, which some call phalænæ prædatrices, or accipitrinæ.

The anelytra, with membranous wings, are bees, flies, wasps, bombylii, crabrones, &c. and to this kind Swammerdam refers the culex vulgaris or gnat, as also the formica or ant.

Hitherto also must be referred such water insects as are covered with a theca or case, according to Willughby. These

are, first, an immoveable case fixed to the stones; and this is either of a round figure, or one more compressed. Secondly, a moveable, portable case; and these are commonly called phryganæa; and their theca is, 1. Straight, and that either composed of straws and little festucæ, lying parallel to one another; of which there are two kinds; a larger, where the festucæ are two inches long; and a lesser, which are very common, and called straw-worms. Or else the festucæ lie transversely, and are shorter, having sometimes pieces of shells or stones intermixed with them; others, whose cases are straight, have no festucæ, but always either sand or gravel; and of these some have the theca round, and called cod-baits; others are flat. 2. Crooked or horned, which run tapering; of these Mr. Ray reckons four kinds; a greater and less black sort, and a greater and less ash-coloured one. These all produce flies with large wings, like butter-flies.

The third species of transmutation is a simple change from a vermiculus to a flying insect, but with a sensible stop between one form and the other of this kind are our flesh flies, and all the nymphae vermiformes, the vespæ, ichneumonæ, &c.

As to the generation of insects, the world is now generally convinced that they are not bred of corruption, but *ex ovo*, though the contrary was believed by the ancients.

Malpighi, Swammerdam, and Redi, have abundantly confuted the doctrine of equivocal generation, as well as the chimerical transformation of the caterpillar into the butterfly; and have shewn, that all the members of the butterfly were inclosed under the nympha or skin of the caterpillar, as the parts of a plant are in the seed.

Insects take particular care to deposit their eggs or semen in such places where they may have a sufficient incubation, and where the young, when hatched, may have proper food till they can shift for themselves. Those whose food is in the water, lay their eggs there: those to whom flesh is a proper food, in flesh; and those to whom the fruits or leaves of vegetables are food, are accordingly deposited there, but constantly the same kind in the same tree. As for others that require a greater degree of warmth, they are provided by the parent with some place in or about the body of other animals, as the feathers of birds, hair of beasts, scales

of fish, in the nose, in the flesh, nay some in the bowels of man, and other creatures. And as for others, they make them nests, by digging into the earth, wood, &c. carrying in and sealing up provisions that serve for the production of their young, and for their food, when produced.

There is observed in flies, butterflies, &c. a kind of glue, by which the female fastens her eggs to the bearing buds of trees, &c. so as not to be hurt by rain or frost.

INSOLVENT, a term applied to persons unable to pay their debts.

INSPIRATION, *Inspiratio*, the conveying certain supernatural notices to the soul. This is such an over-powering impression made of any proposition upon the mind by God himself, as gives an indubitable evidence of the truth and divinity of it.

INSPIRATION, in physic, that part of respiration, whereby the air is drawn into the lungs, and stands contradistinguished from expiration.

This admission of the air depends immediately on its elasticity, when the cavity of the breast is enlarged by the elevation of the thorax and abdomen, and particularly by the motion of the diaphragm downwards. This dilatation of the breast does not draw in the air, though it be a condition absolutely necessary to inspiration, but it is an actual intrusion of the air into the lungs.

INSPISSATING, **INPISSATION**, or **CONDENSATION**, in pharmacy, the reducing a liquor to a thicker consistence by evaporating the thinner parts.

INSTALLMENT, the instating a person in any dignity.

It chiefly denotes the induction of a dean, prebendary, or other ecclesiastic dignitary, into the possession of his proper seat in a cathedral church. This is sometimes called installation.

INSTALLMENT likewise denotes the ceremony, whereby the knights of the garter are placed in their rank in the chapel of St. George at Windsor.

INSTANT, such a part of duration wherein we perceive no succession, or it is that which takes up the time of one idea in our minds.

INSTEP, in the manege, is that part of a horse's hind leg which reaches from the ham to the pastern-joint; and which, when the horse is in his natural posture of standing, should be large, flat, and in
a per-

a perpendicular line with the ground : for when the insteps do not stand perpendicularly, it is a certain sign of weakness either in the reins or hinder quarters.

INSTINCT, an appellation given to the sagacity and natural inclinations of brutes, which supplies the place of reason in mankind.

INSTITUTES, in literary history, a book containing the elements of the Roman law, and constitutes the last part of the civil law.

INSTITUTION, in general, signifies the establishment or founding something.

INSTRUMENT, in general, whatever is subservient to a cause in producing any effect.

A common case of mathematical instruments contains several compasses, a sector, scale, drawing-pen, and protractor.

INSTRUMENT, in law, some public act, or authentic deed, by which any truth is made apparent, or any right or title established in a court of justice.

INSULATED, *Insulatus*, in architecture, an appellation given to such columns as stand alone, or free from any contiguous wall, &c. like an island in the sea, whence its name.

INSURANCE, or **ASSURANCE**, a contract or security, which is commonly called policy, given by one or more persons, whereby they oblige themselves, in consideration of a sum of money paid down, to make good ships, merchandizes, houses, &c. to the value of that for which the premium is received, in case of loss by storm, pirates, fire, &c.

We have in London several offices of insurance from fire, which are erected into corporations, as the Royal Exchange-assurance, the Sun-fire-office, the Hand-in-Hand fire-office, the London-assurance, &c. some for houses, others for goods, and some for both.

There are also offices wherein private merchants grant insurances for ships, and these are called insurance-brokers.

We have also assurances for life, by virtue of which, when the person assured dies, a sum of money, according as he insured, becomes payable to the person in favour of whom the policy of assurance was granted.

There is an office of this kind in Serjeants-Inn, Fleet-Street; but there is a more general one in Nicholas-Lane, which is speedily to be removed to the corner house, next Black-Fryars Bridge; the latter office insures upon lives of any age,

healthy or unhealthy, and for any sum; but that in Serjeants-Inn will admit no life after the age of forty-five years, nor no unhealthy life for a larger sum than three hundred pounds.

INTAGLIOS, precious stones on which are engraved the heads of great men, inscriptions, and the like; such as we frequently see set in rings, seals, &c.

INTEGER, in arithmetic, a whole number, in contradistinction to a fraction.

INTEGRAL Calculus, in the new analysis, is the counter part to the differential calculus. The latter hath been fully explained by M. PHospital; but the former hath been but little cultivated.

The integral calculus of Leibnitz and others answers to the inverse method of fluxions among the English. See *Fluxions*.

INTENDMENT, in law, is the intention, design, or true meaning of a person or thing, which frequently supplies what is not fully expressed: but though the intent of parties in deeds and contracts is much regarded by the law, yet it cannot take place against the rules of law.

INTENDMENT of Crimes; this in case of treason, where the intention is proved by circumstances, is punishable in the same manner as if it was put in execution.

INTERCALARY DAY, in chronology, the odd day inserted in a leap-year.

INTERCOLUMNIATION, in architecture, implies the space between two columns, which is always to be proportioned to the height and bulk of the columns.

INTERCOMMONING, in law, is when the commons of two manors lie together, and the inhabitants of both have, time out of mind, caused their cattle to feed promiscuously on them.

INTERCOSTAL, in anatomy, an appellation given to such muscles, nerves, arteries, and veins, as lie between the ribs.

INTERDICT, an ecclesiastical censure, by which the church of Rome forbids the performance of divine service in a kingdom, province, town, &c.

INTEREST, a sum of money which is reckoned for the loan and forbearance of some other sum lent for, or due at, a certain time, according to a certain rate in the hundred pounds. The sum lent or forborne is called the principal, because it produces the interest, or from which the interest is reckoned. Interest is either simple or compound.

Simple

Simple INTEREST is that which is paid for the loan of any principal or sum of money lent out for some time at any rate, per cent. agreed on between the borrower and the lender; which, according to the laws of England, ought to be but 5l. for the use of 100l. for one year, and 10l. for the use of 100l. for two years; and so on for a greater or less sum, proportionable to the time proposed.

Dr. Halley, De Moivre, Simpson, &c. have explained the method of computing the expectation or estimate of life; we shall therefore here subjoin a curious and useful table, that shews the value of annuities for every fifth year of age to the 75th, at 3, 4 and 5 per cent. as given by the last mentioned gentleman in his *Docrine of Annuities upon Lives*.

Age	Years purch. at 5 per cent.	Years purch. at 4 per cent.	Years purch. at 3 per cent.
6	14.1	16.2	18.8
10	14.3	16.4	19.0
15	13.9	15.8	18.3
20	13.0	14.8	17.2
25	12.3	14.0	16.1
30	11.6	13.1	15.0
35	10.9	12.3	14.1
40	10.3	11.5	13.2
45	9.8	10.8	12.3
50	9.2	10.1	11.4
55	8.5	9.3	10.3
60	7.9	8.4	9.2
65	7.1	7.5	8.0
70	6.2	6.5	6.9
75	5.2	5.4	5.6

INTEREST, in law, is generally taken for a chattel real, or a lease for years, &c. but more for a future term.

INTERJECTION, in grammar, an undeclinable part of speech; signifying some passion or emotion of the mind.

INTERIM, a name given to a formula, or kind of confession of the articles of faith, obtruded upon the protestants after Luther's death by the emperor Charles V. when he had defeated their forces; so called, because it was only to take place in the interim, mean time, till a general council should have decided all points in dispute between the protestants and the Romanists.

INTERLOCUTORY ORDER, in law, an order, that does not decide the cause, but only some matter incident thereto, which happens between the be-

ginning and end of a cause; as when in chancery or exchequer, the plaintiff obtains an order for an injunction until the hearing of the cause; which order, not being final, is called interlocutory.

INTERLUDE, an entertainment exhibited on the theatre between the acts of a play, to amuse the spectators while the actors shift their dress, or to give time to change the scenes and decorations.

INTERMITTENT or INTERMITTING FEVERS, such fevers as go off and soon return again, in opposition to those which are continual.

INTERNAL, in general, denotes whatever is within a thing.

INTERNODIUM, among botanists, the space between two knots or joints of the stalks of barley, oats, and the like plants.

INTEROSSEUS, in anatomy, an appellation given to the muscles which move the fingers and toes, from their being situated between the bones of those parts.

INTERPRETER, a person who explains the words or writings of another, so as to make them intelligible to those who did not understand them before.

INTERREGNUM, the time during which the throne is vacant, in elective kingdoms; for in such as are hereditary, like ours, there is no such thing as an interregnum.

INTERREX, the magistrate who governs during an interregnum.

INTERROGATION, or *Point of INTERROGATION*, in grammar, a character of this form (?) serving to denote a question.

INTERROGATION, in rhetoric, is a figure, whereby the orator proposes something by way of question; which, it must be owned, greatly enlivens the discourse.

INTERROGATORIES, in law, questions wrote down, and demanded of the witnesses examined in a cause, more especially in the court of chancery.

INTERRUPTION denotes the same thing with disjunction in proportion, and is noted thus ($:$) signifying the breaking of the ratio in the middle of four discrete proportionals, as $A : B :: C : D$; that is, as A to B , so is C to D .

INTERRUPTION, in rhetoric, when a person breaks off his discourse suddenly to shew some passion.

INTERSECTION, in mathematics, the cutting of a line or plane by another, or the point or line wherein two lines, or two planes, cut each other.

I N T

The mutual intersection of two planes is a right line. The center of a circle is in the intersection of two diameters, &c. The equinoxes happen, when the sun is in the intersections of the equator and ecliptic.

INTERVAL, in music, the difference between two sounds; in respect of acute and grave; or, that imaginary space terminated by two sounds, differing in acuteness or gravity.

INTERVALS, in gardening and husbandry, the spaces left between the several rows of plants sown or set in gardens or fields. See *Husbandry*.

INTESTATE, in law, a person that dies without making a will; in which case, a distribution of his personal estate, after his debts and funeral charges are paid, is to be made among the wife and children of the deceased, or for want of such, among the next kin.

INTESTINES, in anatomy, long, cylindrical, hollow, and membranaceous bodies; or rather, one such continued body, or tube, reaching from the stomach to the anus.

The use of the smaller guts is to promote the formation of the chyle, to perfect its secretions, and to propel the remaining fæces to the larger. The office of the larger guts is to receive and collect the matter of the fæces, and at a proper time to expel it.

INTESTINAL, something belonging to, or seated in the intestines.

INTRENCHMENT, or **RETRENCHMENT**, in the art of war. See the article *Retrenchment*.

INTRIGUE, an assemblage of events or circumstances, occurring in an affair, and perplexing the persons concerned in it. In this sense, it is used to signify the plot of a play or romance; or that point wherein the principal characters are most embarrassed, through the artifice and opposition of certain persons, or the unfortunate falling out of certain accidents and circumstances.

In tragedy, or an epic poem, there are always two designs. The first and principal is that of the hero of the piece. The second contains the designs of all those who oppose him. These opposite causes produce opposite effects; to wit, the efforts of the hero for the execution of his design, and the efforts of those who thwart it. As those causes and designs are the beginning of the action, so these efforts are the middle, and there form a knot or

I N V

difficulty which we call the intrigue, that makes the greatest part of the poem. It lasts as long as the mind of the reader or hearer is suspended about the event of those opposite efforts: the solution or catastrophe commences when the knot begins to unravel, and the difficulties and doubts begin to clear up.

INTRINSIC, a term applied to the inner, real, and genuine values, properties, &c. of any thing, in opposition to their extrinsic or apparent values, &c.

INTRUSION, in law, obtains where an ancestor dies seized of an estate, or inheritance, which is expectant upon an estate for life, and the tenant for life dies; after which a stranger enters before the heir, in which case he is said to intrude.

INTUITION, among logicians, the act whereby the mind perceives the agreement or disagreement of two ideas, immediately by themselves, without the intervention of any other; in which case, the mind perceives the truth as the eye doth the light, only by being directed towards it. Thus the mind perceives that white is not black, that three are more than two, and equal to one and two.

INVALID, a person wounded, maimed, or disabled for action by age, &c.

INVECTED, in heraldry, denotes a thing fluted or furrowed.

INVECTIVE, in rhetoric, differs from reproof, as the latter proceeds from a friend, and is intended for the good of the person reproved; whereas the invective is the work of an enemy, and entirely designed to vex and give him uneasiness.

INVENTION denotes the act of finding any thing new, or even the thing thus found.

INVENTION, in rhetoric, according to Bacon, signifies the finding out and choosing of arguments which the orator is to use for proving his point, or moving his hearers passions.

INVENTION, in poetry, is applied to whatever the poet adds to the history of the subject he has chosen, as well as to the new turn he gives it.

INVENTION, in painting, the choice which the painter makes of the objects that are to enter the composition of his piece.

INVENTORY, in law, &c. is a schedule containing all the goods and chattels of a deceased person that belonged to him at the time of his death, together with the value of the same, as appraised by two or more indifferent persons.

INVERSE,

INVERSE is applied to a manner of working the rule of three, or proportion, which seems to go backward, or contrary to the order of the common or direct rule.

INVERSE Method of Fluxions. See *Fluxions*.

INVERSION, in grammar, is where the words of a phrase are ranged in a manner not so natural as they might be.

It is a considerable beauty either in verse or prose, when we have it from an able hand; it gives vigour and variety to a sentence, and keeps the mind in an agreeable suspense and expectation of a marvellous turn and conclusion.

INVESTIGATION properly denotes the finding any thing out by the prints of the feet.

Mathematicians, &c. have hence applied the word to the respective researches in which they are employed.

INVESTITURE, in law, a giving livery of seisin or possession.

INVOCATION, in theology, the act of adoring God, and especially of addressing him in prayer for his assistance and protection.

INVOCATION, in poetry, an address at the beginning of a poem, wherein the poet calls for the assistance of some divinity, particularly of his muse, or the deity of poetry.

INVOICE, an account in writing of the particulars of merchandize, with their value, custom, charges, &c. transmitted by one merchant to another in a distant country.

One copy of every invoice is to be inserted verbatim in the invoice-book, for the merchant's private use; and another copy must, immediately upon shipping off the goods, be dispatched by post, or otherwise, to the correspondent. This copy is commonly drawn out upon a sheet of large post paper, to the end of which is subjoined a letter of advice.

INVOICE-BOOK. This book is paged, and contains copies of the invoices of goods sent to sea: for as a merchant is obliged to send his correspondent an invoice of all the goods he consigns to him; so it is reasonable that he should keep a copy of it for himself.

INVOLUCRUM, among botanists, that sort of calyx, or cup, which surrounds a number of flowers together, every one of which has, besides this general cup, its own particular perianthium.

The involucre consists of a number

of little leaves, disposed in a radiated manner.

INVOLUTION, in algebra, the raising any quantity from its root to any height or power assigned.

The quantity a^m expresses any power of a in general; the exponent (m) being un-

determined; and a^{-m} expresses $a^{\frac{1}{m}}$, or a negative power of a of an equal exponent:

and $a \times a^{-m} = a^{m-m} = a^0 = 1$

is their product; a^n expresses any other power of a ; $a^m \times a^n = a^m \times a^n$ is the product of the powers a^m and a^n , and a^{m-n} is their quotient.

To raise any simple quantity to its 2d, 3d, or 4th power, is to add its exponent twice or four times to itself; therefore, the 2d power of any quantity is had by doubling its exponent, and the 3d, by trebling its exponent; and in general, the power expressed by m of any quantity, is had by multiplying the exponent by m , as is obvious from the multiplication of powers.

JOACHIMITES, in church history, the disciples of Joachim, a Cistercian monk, who was an abbot of Flora in Calabria, and a great pretender to inspiration.

The Joachimites were particularly fond of certain ternaries: the Father, they said, operated from the beginning till the coming of the Son; the Son, from that time to theirs, which was the year 1260; and from that time the Holy Spirit was to operate in his turn. They also divided every thing relating to men, to doctrine, and the manner of living, into three classes, according to the three persons in the Trinity: the first ternary was that of men; of whom the first class was that of married men, which had lasted during the whole period of the Father; the second was that of clerks, which had lasted during the time of the Son; and the last was that of the monks, in which there was to be an uncommon effusion of grace by the Holy Spirit: the second ternary was that of doctrine, viz. the Old Testament, the New, and the everlasting Gospel; the first they ascribed to the Father, the second to the Son, and a third to the Holy Spirit: a third ternary consisted in the manner of living, viz. under the Father, men lived according to the flesh; under the Son, they lived according to the flesh and the spirit;

spirit; and under the Holy Ghost, they were to live according to the spirit only.

JOB, or *Book of JOB*, a canonical book of the Old Testament, containing a narrative of a series of misfortunes which happened to Job, as a trial of his virtue and patience; together with the conferences he had with his cruel friends, on the subject of his misfortunes, and the manner in which he was restored to ease and happiness. This book is filled with those noble, bold, and figurative expressions, which constitute the very soul of poetry.

Many of the Jewish rabbins pretend that this relation is altogether a fiction: others think it a simple narrative of a matter of fact, just as it happened: while a third sort of critics acknowledge that the ground-work of the story is true, but that it is wrote in a poetical strain, and decorated with peculiar circumstances, to render the narration more profitable and entertaining.

The time is not set down, in which Job lived. Some have thought that he was much ancienter than Moses, because the law is never cited by Job or his friends; and because it is related that Job himself offered sacrifices. Some imagine that this book was absolutely wrote by himself; others say, that Job wrote it originally in Syriac or Arabic, and that Moses translated it into Hebrew: but the rabbins generally pronounce Moses to be the author of it, and many Christian writers are of the same opinion.

JOBBER, in law, a person that buys and sells cattle for others. Hence stock-jobbers are persons who buy and sell stocks for other persons.

JOGUIS, among the East-Indians, a kind of hermits, who generally stand under trees, or near their pagods. Some of them go stark naked, holding their arms across over their heads, and continue in that posture all their lives: others lie on the ground, with one leg higher than the other, and their arms raised above their head; and these wretched penitents insensibly lose the use of their arms and legs: some confine themselves in cages, set on the top of a thick stake, fixed in the ground, and these cages are so small, that they put the penitent to prodigious torture: some holding a sabre in one hand, and a kind of shield in the other, go up a kind of crane, where hooking themselves to an iron, which runs a considerable way

into their backs, they spring forward into the air, flourishing their sabres, and launching out into extravagant praises of their idols; and others plunge into the Ganges, in hopes of being devoured by a crocodile, fancying that by this means they shall obtain the happiness of the next life.

These miserable wretches are considered by the Indians as perfect models of piety and holiness: they are followed by persons of both sexes, who make a vow of devoting themselves to their service, and are wholly employed in soothing their voluntary sufferings, by offering them alms and refreshments. They call the pious to their devotions, by ringing a little bell; and when they hold their spiritual conversations, they sit close in a ring, and set up a banner, made of several pieces of stuff, fastened at the end of a stick.

JOHN, or *Gospel of St. JOHN*, a canonical book of the New Testament, containing a recital of the life, actions, doctrine, and death of our Saviour Jesus Christ, written by St. John the Apostle and Evangelist. See *Gospel*.

St. John wrote his gospel at Ephesus, after his return from the Isle of Patmos, at the desire of the Christians of Asia. St. Jerom says, he would not undertake it, but on condition they should appoint a public fast, to implore the assistance of God; and that the fast being ended, St. John, filled with the Holy Ghost, broke out into these words, "In the beginning was the word, &c." The ancients assign two reasons for this undertaking: the first is, because, in the other three gospels, there was wanting the history of the beginning of Jesus Christ's preaching, till the imprisonment of John the Baptist; which, therefore, he applied himself particularly to relate. The second was, in order to remove the errors of the Corinthians, Ebionites, and other sects.

St. JOHN's WORT, a plant called by authors hypericum. See the article *Hypericum*.

* **JOHN**, surnamed Lackland, king of England, the fourth son of king Henry II. ascended the throne in 1199, after the death of his brother Richard I. though Arthur, duke of Brittany, to whom it lawfully belonged, as being the son of Godfrey, his eldest brother, disputed it with him; but the young prince being taken by surprize at Mirabeau in Brittany, in 1202, was murdered in prison. Upon this, Constance, the mother of Arthur,

implored the assistance of Philip Augustus, king of France, who promised to strip him of all the lands he possessed in France; and pope Innocent III. not only excommunicated him, but absolved all his subjects from their oath of allegiance: at length the pope sent Pandolph his nuncio into England, who offered the king the pope's protection on condition of his swearing to obey the pontiff, and to resign his crown to him. To this John consented, and repairing to Dover church, in the presence of the priests and people, took off his crown, disrobed himself, and laid all his ensigns of royalty at the feet of the nuncio, who was seated on a throne. After which he signed a paper, by which he resigned the kingdom of England, with the lordship of Ireland, to the holy see; and bound himself as a vassal to pay seven hundred marks annually for England, and three hundred for Ireland; and then did homage to the pope in the person of his nuncio, who kept the crown and scepter five days in his possession.

The barons of England, fired with indignation at this meanness, and oppressed by the heavy taxes with which he loaded them, had recourse to arms, and demanded a re-establishment of the laws of Edward the Confessor, and a renewal of the charter of Henry the First: which being refused by the king, they elected Robert Fitzwalter for their general, entered London, and besieged him in the Tower. The king complied when he could no longer resist, and agreed to meet the barons in Runnemead, or the Mead of Council, between Stains and Windsor; and there being unable to obtain supplies from his people, and finding himself too weak to withstand his enemies, granted whatever they desired, and hence arose the famous charter of liberties called Magna Charta, which he was obliged to sign, and also the charter of the liberties of the forest; charters that have been since esteemed the foundation of the English liberties. The king however, though he had ratified these charters with a most solemn oath, brought over an army from Flanders, and ravaged the whole kingdom; upon this the barons applied for assistance to the king of France, promising the crown to his son Lewis, if he freed them from John's tyranny. Lewis soon came to their assistance, landed at Sandwich, and took Rochester, while John retired to Winchester, having prevailed on the pope to excommunicate both the French king and the

English barons; but being deserted by some of his mercenaries, the dauphin besieged Dover, while the barons invested Windsor; after which the country was ravaged by both parties, who came to no engagement. At length grief and fatigue threw the king into a fever, which is said to have been heightened by his eating of peaches and drinking new ale. He died on the 18th of October, 1216, in the fifty-first year of his age, and the seventeenth of his reign. Others say he died of poison. He was succeeded by Henry III.

* JOHNSON (Mrs.) the Stella of dean Swift, under which name he always mentioned her, was the daughter of Sir William Temple's steward, and the concealed, though undoubted wife of Swift. Sir William Temple bequeathed her in his will a thousand pounds, as an acknowledgment of her father's faithful services. She had an elevated understanding, with all the delicacy and softness of her sex. Her voice, though sweet in itself, was rendered still more harmonious by what she said. Her wit was poignant without severity; her manners were humane, polite, easy, and unreserved: wherever she came she attracted attention and esteem. She was strictly virtuous, sincerely religious, and constant, though not ostentatious, in her devotions. She had great skill in music, and was perfectly well versed in all the arts proper to employ a lady's leisure. Her wit was a fund of perpetual cheerfulness, and her prudence kept that cheerfulness within proper bounds. In short, she exactly resembled the description Homer has given of Penelope:

A woman loveliest of the lovely kind,
In body perfect, and complete in mind.

This is the character given of Stella by those who knew her best. How long she remained in England after Sir William Temple's death, is not known; but it appears that she was married to Dr. Swift in the year 1716, by Dr. Ashe, then bishop of Clogher, though she never could prevail upon him to acknowledge her openly as his wife. The flaw which in Swift's eye reduced the value of such a jewel, was the servile state of her father; he was a man of probity, but he was only the steward of Sir William Temple. Hence Dr. Swift and Mrs. Johnson preserved the same manner of life after marriage as before it. They lived in separate houses; he remaining at the deanery, she in lodgings

ings at a distance from him, and on the other side of the Liffey. Nothing appeared in their behaviour inconsistent with decorum, or beyond the limits of Platonic love. They conversed like friends, but industriously took care to summon witnesses of their conversation; a rule to which they adhered so strictly, that it would be difficult to prove that they had ever been together without a third person. A conduct so unnatural gave room for various comments and reflections; but however unaccountable this renunciation of the marriage rights may appear to the world, it certainly did not arise from any consciousness of too near a consanguinity between them, though the general voice of fame was willing to make them both the natural children of Sir William Temple; but this could not be true, Sir William being employed as a minister abroad from the year 1665 to 1670, so that Swift's mother, who never crossed the sea, except from England to Ireland, was out of all possibility of a personal correspondence with him, for two years before his birth. It may be imagined that a woman of Stella's delicacy must repine at such a situation. The outward honours she received are frequently bestowed on a mistress: though a wife, she was not acknowledged in that character, and though strictly virtuous, was obliged to submit to all the appearances of vice, except in the presence of those few witnesses of the cautious manner in which she lived with her husband. Hence inward anxiety disturbed by degrees the calmness of her mind, and the strength of her body. She began to decline in her health in the year 1724, and from the first symptoms of decay, rather hastened than shrunk back in the descent; tacitly pleased to find her footsteps tending to that place where they neither marry, nor are given in marriage. She died about the end of January 1727, or 1728, absolutely destroyed by the peculiarity of her fate; a fate which perhaps she could not have endured by an alliance with any other man upon earth.

JOINDER, or JOYNDER, in law, signifies the joining of two persons in one suit against another; as for instance, if there are two joint-possessors of goods, and these are taken from one of them, they may both join in an action to recover them.

JOINERY, the art of working in wood, or of fitting various pieces of timber together.

JOINT, in general, denotes the juncture of two or more things.

The joints of the human body are called by anatomists articulations.

The term joint is also applied to the separation between the stones or bricks of a building, usually filled with mortar, plaster, or cement: also by carpenters, to the several manners of assembling or fitting pieces of wood together; as a dove-tail joint, &c.

Stiffness of the JOINTS, in surgery and medicine, sometimes proceeds from the bones being broken, bruised, or wounded, especially about the extreme parts, which being kept in one posture, in order for cure, the synovia of the joints becomes thick, and depraves or quite abolishes its motion; or it may proceed from the bony juice proceeding from broken bones, and insinuating itself into the joint. Hoffman says, diseases of the joints sometimes proceed from spams of the ligament.

JOINT-EXECUTORS, in law, are when two or more persons are appointed such by will; in which case they are accounted but as one single person; so that the actions done by one of them are taken to be the acts of all, because they all represent the person of the testator.

JOINT LIVES, in law, is where any thing is granted or given to two or more during their lives.

JOINT-TENANTS, such as hold lands or tenements jointly by one title; as where a man grants lands, &c. to persons and their heirs; such persons, during their joint tenancy, must jointly plead, as well as be jointly sued, which is common to them with coparceners of lands.

JOINTURE, in law, generally implies a settlement of lands and tenements made on a woman in consideration of marriage.

It also signifies a covenant, by which the husband, or some friend of his, assures lands, &c. to his wife, for the term of her life.

JOISTS, or JOYSTS, in architecture, those pieces of timber framed into the girders and fommers, on which the boards of the floor are laid.

Joists are from six to eight inches square, and ought seldom to lie at a greater distance from each other than ten, or at most twelve inches, nor ought they ever to bear a greater length than ten feet, or to be less into the wall than eight inches. All joists on the back of a chimney ought

to be laid with a trimmer, at six inches distance from the back.

Some carpenters furr their joists, as they call it; that is, they lay two rows of joists, one over another, the undermost of which are framed level with the under side of the girder; and the uppermost, which lie cross the lower ones, lie level with the upper side of the girder.

JONAH, or *Prophecy of JONAH*, a canonical book of the Old Testament, in which is related, that Jonah was ordered to go and prophesy the destruction of the Ninevites; but that disobediently attempting a voyage another way, he was discovered by the rising of a sudden tempest, and cast into the sea, where he was swallowed up by a whale, which having lodged him three days and three nights in his belly, disgorged him upon the shore; whereupon being sensible of his past danger and surprising deliverance, he betook himself to the journey and embassy to which he was appointed; and arriving at Ninevah, the metropolis of Assyria, he, according to his commission, boldly laid open to the inhabitants, their sins and miscarriages, and proclaimed their sudden overthrow; upon which the whole city, by prayer and fasting, and a speedy repentance, happily averted the divine vengeance, and escaped the threatened ruin.

IONIC ORDER, the third of the five orders of architecture, being a kind of mean between the robust and delicate orders.

The first idea of this order was given by the people of Ionia, who, according to Vitruvius, formed it on the model of a young woman of an elegant shape, dressed in her hair; whereas the Doric had been formed on the model of a strong robust man. The Ionic order is distinguished from the Composite, in that it has none of the acanthus-leaves in its capital; and from the Tuscan and Doric, by the channels and flutings in its shaft.

The capital of this order is adorned with volutes, and its cornice with dentels. The proportions of the Ionic pillar, as they are taken from the famous one in the temple of Fortuna Virilis at Rome, now the church of St. Mary the Egyptian, are these:

1. The entire order from the superficies of the area to the cornice, are twenty-two modules, or eleven diameters.

2. The column with its base contains eighteen modules.

3. The entablature contains four modules.

4. The volute of the capital is of an oval form.

5. The columns in this order are often hollowed, and furrowed with twenty-four gutters or channels, called flutings: these flutings are not always concave from the top of the shaft to the bottom, but for that third of it next the base, they are filled up with a kind of rods or cones; and in the other two thirds they are left hollow, or striated, in imitation of the folds or plaits of a garment.

When this order was first invented, its height was but sixteen modules; but the ancients, to render it still more beautiful than the Doric, augmented its height, by adding a base to it.

Mr. Le Clerc makes its entablement four modules and ten minutes, and its pedestal six entire modules; so that the whole order makes twenty-eight modules ten minutes.

This order is at present used properly in churches and religious houses, courts of justice, and other places of tranquillity and devotion.

This order has one advantage above any of the rest, which consists in this, that the fore and hind parts of its capital are different from its sides; but this is attended with an inconvenience, when the ordonnance is to turn from the front of the building to the side; to obviate which the capital may be made angular, as is done in the temple of Fortuna Virilis.

Scamozzi, and some other modern architects, have introduced the upper part of the Composite capital, in lieu of the Ionic, imitating that of the temple of Concord, whose four sides are alike. To render it a little more beautiful, the volute may be made a little oval and inclining.

For the base, cornice, frieze, and pedestal of this order, see the articles *Base*, *Corniche*, &c.

IONIC DIALECT, in grammar, a manner of speaking peculiar to the people of Ionia.

IONIC SECT was the first of the ancient sects of philosophers; the others were the Italic and Eleatic. The founder of this sect was Thales, who being a native of Miletus in Ionia, occasioned his followers to assume the appellation of Ionic: Thales was succeeded by Anaximander, and he by Anaximenes, both of Miletus; Anaxagoras Clazomenius succeeded them, and removed his school from

from Asia to Athens, where Socrates was his scholar. It was the distinguishing tenet of this sect that water was the principle of natural things.

IONIC TRANSMIGRATION was anciently a very celebrated epocha; it took its rise from the retreat of the Athenian colonies, who upon the death of Codrus, put themselves under the command of his son Neleus, and established the twelve cities of Ionia in Asia. These colonies, according to Eratosthenes, were established fifty years after the return of the Heraclidæ; and according to Martham, seventy-seven years after the taking of Troy.

* **JONSON (BENJAMIN)** one of the greatest dramatic poets of his time, was the son of a clergyman, and was born at Westminster, in the year 1574. He was educated at Westminster-school, where Camden was his master; from whence his mother, who had married a bricklayer for her second husband, took him home, and obliged him to work at his father-in-law's trade; but being extremely averse to that employment, he enlisted himself a soldier, and being taken to the English army in the Netherlands, distinguished himself by his bravery, killing and despoiling one of the enemy in the view of both armies.

Upon his return to England, he resumed his former studies, and was admitted into St. John's college, Cambridge; but being unable to supply the decent conveniencies of a learned ease, he entered into an obscure play-house called the Curtain, in the neighbourhood of Shoreditch, or Clerkenwell; but his attempts as an actor could neither recommend him to a share in any of the theatres, which were then very numerous in London, nor provide him a support; on the contrary, they rendered him a subject of ridicule. While he was thus a retainer to the stage, he had the misfortune to be engaged in a duel with one of his brother actors, and was wounded in the arm, by his adversary's sword, which was ten inches longer than his own. However, he killed his opponent, who had challenged him. For this offence he was committed to prison, and during his confinement was visited by a popish priest, who taking advantage of his dejection of spirits, made him a convert to the church of Rome, in which he continued for twelve years.

At his first entrance into the play-house

he had written a play or two, which had been condemned; he was twenty-four years of age when he offered another to the stage, which he had put into the hands of a person who had carelessly run it over, and was just upon returning it, with the answer, that it would be of no service to their company, when Shakespear casting his eye upon it, found something in it that pleased him, and therefore not only read it through, but brought it upon his own stage, where he was a manager, and acted a part in it himself. This was an introduction to farther favours from Shakespear, who ever after continued to recommend our young poet, and his productions, to the public; he ever lent his hand in finishing some of them, and played a part in every play wrote by Jonson, as long as he continued on the stage. The first dramatic performance he printed, was his comedy entitled *Every Man in his Humour*, acted in 1598, after which he for some time regularly produced a play every year, and in 1600 made his court to queen Elizabeth, whom he complimented under the allegorical personage of the goddess Cynthia, in his *Cynthia's Revels*, which was that year acted by the children of the queen's chapel.

On the accession of James I. he joined with Chapman and Marston, two other dramatic writers, in a comedy called *Eastward Ho*, in which, being accused of reflecting on the Scots, they were all three committed to prison, and were in danger of losing their ears and noses; but upon their submission, received a pardon; at which Jonson was so rejoiced, that he gave an entertainment to his friends, among whom were Camden and Selden.

In the midst of the entertainment, his mother drinking to him, shewed him a paper of poison, which she told him she intended to have given him with his liquor, after having taken a part of it herself, had the sentence of his punishment passed.

As queen Elizabeth had encouraged the taste of masques, so in the reigns of James and Charles I. the exhibition of them became the principal diversion of the court, and Jonson was the principal person, who distinguished himself in writing these pieces, while the dresses and decorations were managed by Inigo Jones: but Jonson at length quarrelling with him, made him the subject of his ridicule, in the character of sir *Lantern Leatherhead*, in his comedy of *Bartholomew Fair*.

At

At length Mr. Jonson gained so high a reputation, that he was made poet-laureat to king James I. and in 1630 he wrote a petition to king Charles I. craving, that as his royal father had allowed him an annual pension of an hundred marks, he would make them pounds. This was granted, and a tierce of Spanish wine. In his last sickness he often said, that he repented of the profanation of the Scriptures in his plays. He died on the 16th of August, 1637, in the sixty-third year of his age, and was interred in Westminster-abbey, where there is a monument erected to his memory, containing his bust, and the short inscription, "O rare Ben Jonson."

JOSHUA, a canonical book of the Old Testament, containing a history of the wars and transactions of the person whose name it bears. This book may be divided into three parts: the first of which is a history of the conquest of the land of Canaan; the second, which begins at the twelfth chapter, is a description of that country, and the division of it among the tribes; and the third, comprized in the two last chapters, contains the renewal of the covenant he caused the Israelites to make, and the death of their victorious leader and governor. The whole comprehends a term of seventeen, or, according to others, of twenty-seven years.

JOURNAL, a day-book, register, or account of what passes daily.

JOURNAL, or **DAY-BOOK**, among merchants, that wherein the transactions recorded in the waste-book, are prepared to be carried to the ledger, by having their proper debtors and creditors ascertained and pointed out. See *Book-Keeping*.

JOURNAL, among seamen; a certain diary of the occurrences that happen from noon to noon in the course of the voyage, as winds, weather, setting and shifting of sails, and remarking the various courses and distances run, which are reduced into one, and corrected by a solar observation. Every thing material that happens to the ship or her crew is also observed particularly in this journal.

IPECAUANHA, in pharmacy, a slender root, brought from the Spanish West-Indies, in short pieces variously bent and contorted, full of wrinkles and deep circular fissures, which reach quite down to a small whitish woody fibre, that runs in the middle of each piece: the cortical part is compact, brittle, and looks smooth and resinous on breaking. Two sorts of this

root are met with in the shops, one brought from Peru, the other from Brazil; usually denominated, from their external colour, the first whitish, grey, or ash-coloured, the other brown. The first is generally preferred, being found to operate with the greatest certainty and mildness.

A root has been brought over under the name of white ipecacuanha, which has little or nothing of the virtues of the two foregoing: this is easily distinguished by its yellowish white colour, woody texture, and having no fissures or wrinkles. More dangerous abuses have sometimes been committed, by the substitution or mixture of the roots of an American apocynum, which have been found to operate with great violence, both upwards and downwards, and in some instances, as is said, to prove fatal: these may be known by their being larger than the true ipecacuanha, the fissures more distant, the intermediate spaces smoother, and more particularly by the colour of the medullary fibre, which in the poisonous roots is a deep reddish yellow, in the true ipecacuanha, a whitish or pale greyish.

Ipecacuanha has scarcely any smell, unless during its pulverization or infusion in liquors, in which circumstances it emits a faint nauseous one: in chewing, the wrinkled cortical part proves bitterish and subacid, and covers the tongue as it were with a kind of mucilage; the medullary woody fibre is nearly insipid. Geoffroy observes, that in pulverizing considerable quantities, the finer powder that flies off, unless great care be taken to avoid it, is apt to affect the operator with a difficulty of breathing, a spitting of blood, a bleeding at the nose, or a swelling and inflammation of the eyes and face, and sometimes of the throat; and that these symptoms go off in a few days, either spontaneously, or by the assistance of venesection.

This root is the mildest and safest emetic that has yet been discovered; and may be ventured on almost in the lowest circumstances, where the stomach requires to be unloaded. The common dose is from ten grains to a scruple, and upwards. In the Medical Observations and Enquiries, published by a society of physicians in London, a great number of cases is mentioned, in which two grains operated sufficiently: in constitutions which bore vomiting ill, and which were greatly ruffled by the usual doses, two or three grains operated with great ease. Where it fails of operating upwards, it commonly purges, and

and sometimes considerably; in this intention it may be employed, in several cases, to advantage, in conjunction with other purgatives, to determine its action downwards: fifteen grains of jalap with two or three of ipecacuanha have been found to purge more than twice the quantity of jalap by itself.

The ipecacuanha was first introduced, about the middle of the last century, as a specific in dysenteries; and repeated experience has confirmed its efficacy in this distemper, not only when used as an emetic, but likewise when given in such small doses as scarcely to affect the grosser emunctories. In common dysenteretic fluxes, it frequently performs a cure in a very short space of time; not by its exerting an astringent power, as some have supposed, for it does not appear to have any real astringency; nor by its mucilaginous substance covering the intestines, and incrassating thin humours, as others, with more plausibility, have inferred both from its mucilaginous taste, and from the robiness and fliminess which it manifestly communicates to the contents of the stomach; but apparently by promoting perspiration, the freedom of which is in these cases of the utmost importance; and an increase of which, even in a state of health, is generally observed to diminish the evacuation by stool. In common dysenteries, the skin is for the most part dry and tense, and perspiration obstructed; and indeed this obstruction, and the conversion of the perspirable matter upon the intestines, is very frequently the immediate cause of the disease. Most of the common diaphoretics pass off, in these cases, without effect: but ipecacuanha, if the patient after a puke or two be covered up warm in bed, brings on a free diaphoresis, or a plentiful sweat, by which means the distemper has often terminated at once. In putrid or malignant dysenteries, or where the patient breathes a tainted air, it has not been found equally successful: it requires here to be continued for several days, or repeated as an evacuant, with the further assistance of rhubarb, cordial antiseptics, and mild opiates or astringents. Where plentiful evacuation is necessary, or the offending matter lodged deep, and the operation can be borne without inconvenience, the ipecacuanha is most advantageously given in small quantities at a time, and repeated at proper intervals, till a vomiting or purging comes on.

The emetic virtue of ipecacuanha re-

sides in its resinous parts. By digesting the root in fresh quantities of rectified spirit, and inspissating the filtered tinctures, a resinous extract is obtained, to the quantity of about three ounces from sixteen, which, by itself, vomits strongly, and with great irritation: the residuum yields to water nearly four ounces of a soft tenacious mucilage, which has scarcely any sensible operation. If only a part of the resin be extracted by slight digestion in a little highly rectified spirit, the remaining root proves more gentle, and rather purgative than emetic: in this state it is recommended by some in dysenteries accompanied with a considerable fever, where the root with its natural quantity of resin might irritate too much; but as small doses of the root itself operate with all the ease and gentleness that can be wished for, this precarious method of weakening it does not appear advisable.

By boiling in water, a part of the resin is taken up with the mucilage; the extract amounting to about six ounces from sixteen, and proving mildly emetic. The best menstruum for extracting the entire virtue of the root, appears to be a mixture of one part of pure spirit, with two or rather three parts of water: after sufficient digestion in this menstruum, neither water nor spirit took up any thing considerable from the remainder. In the shops, wine is employed: an ounce of the root is macerated or digested in a pint of canary or mountain; to which some add a quarter of an ounce of dried orange peel, to cover the unpleasant flavour of the ipecacuanha. These tinctures, in doses of from half an ounce or less to an ounce and upwards, prove mildly emetic. *Lewis's Materia Medica.*

* IPHIGENIA, in fabulous history, the daughter of Agamemnon and Clytemnestra, was conducted to the altar in order to be sacrificed to Diana; that goddess being no otherwise to be appeased for Agamemnon's having sacrificed one of her hind; but when Iphigenia was ready to receive the fatal stroke, Diana had compassion on her, and put a hind in her place.

* IPHIMEDIA, in fabulous history, the wife of Aloeus, was ravished by Neptune, by whom she had Orus and Ephialtes, two giants, who grew nine inches every month.

* IPHIS, in fabulous history, the daughter of Lygdus and Telethusa. While Telethusa was pregnant, Lygdus expressed his

His wishes to have a son; but at the same time let her know, that if she brought forth a daughter, he had doomed the hapless innocent to death. The goddess Isis, however, encouraged Telethusa to put her confidence in her, promising to assist her. Iphis therefore was no sooner born than she was declared to be a boy, and the deceit being successfully carried on, Lygdamus procured for her a beautiful maid, who was in love with Iphis, and who at the same time returned her affection, lamented her sex. At length, when they were at the point of being married, Telethusa and Iphis implored the assistance of Isis, who changed the maid into a youth.

* **IPHITUS**, the son of Proxonides, king of Elis, in Peloponnesus, was contemporary with Lyncurgus; and restored the Olympic games in the four hundred and forty-second year after their institution by Hercules. It is believed, that this re-establishment was made in the eight hundred and eighty-fourth year before the Christian era, that is, one hundred and eight years before the epocha of the vulgar Olympiads, which falls in the seven hundred and seventy-sixth year before the Christian era.

IPOMÆA, American jasmīne, in botany. This plant is by some reckoned a species of the convolvulus.

* **IPSWICH**, a town of Suffolk. It is a place of great antiquity, and extends from St. Matthew's to St. Helen's, near a mile on the road, and is as much from north to south. It is pleasantly seated on the river Jipp, or Orwell, over which there is a fair stone bridge, leading to that part called Stoke. It was once fenced about with a wall or rampart, the traces of which are still to be seen. It had eight hundred burgesses in Edward the Confessor's time, with six or seven monasteries. But at present it is divided into four wards, containing twelve parish churches, and there were seven or eight other churches and chapels, which are long since ruined. The last charter was given them by Charles II. It is governed by two bailiffs, and ten other port-men, two chamberlains, a recorder, a town-clerk, and twenty-four common-council-men. The two members of parliament are elected by the freemen at large. It has a guildhall, two hospitals, a free-school, with a good library, and several almshouses. The quarter-sessions for the Ipswich division are held here, and they have the privilege of holding pleas for all ac-

tions. The bailiffs and four of the port-men are justices of the peace. It was plundered by the Danes in 991, who demolished the ditch and rampart of the town; and forced the inhabitants to pay ten thousand pounds; and king Stephen demolished the castle, which had been built by William the Conqueror. Cardinal Wolsey, who was a native of this place, and the son of a butcher, began to erect a college here, which he did not finish. There are the ruins of several religious houses still to be seen, and one of them is converted into a mansion-house, and has a park and bowling-green belonging to it. Here is a convenient key, and a custom-house, and very large ships have been built here, for as the tide rises twelve feet high, such ships may now get up, within a small distance of it, though at low water the harbour is almost dry. The houses are built in the old fashion, and the streets are large. Long. 1. 6. E. Lat. 52. 12. N.

* **IRELAND**, a large fruitful island, seated on the west of Great Britain, and is two hundred and fifty miles in length, and one hundred and fifty in breadth. It is sixty miles distant from Holy-head in North-wales, and fifteen from Galloway in Scotland, being seated between fifty-one and fifty-six degrees of north latitude. It is bounded on the north by the Northern Ocean, on the east by St. George's Channel, and on the south and west by the Western Ocean. It is divided into four large provinces, namely, Ulster on the north, Leinster on the east, Munster on the south, and Connaught on the west. The whole area or superficial content of this island, is computed to contain near eighteen millions of acres English measure. Leinster contains twelve counties, namely, Louth, East-Meath, West-Meath, Longford, Dublin, Kildare, King's County, Queen's County, Wicklow, Carlow, Wexford, and Kilkenny. Ulster contains nine counties, namely, Donegall or Tyrconnel, Londonderry, Antrim, Tyrone, Fermanagh, Armagh, Downe, Monaghan, and Cavan. The province of Munster contains six counties, viz. Cork, Waterford, Tipperary, Limerick, Kerry, and Clare: and Connaught comprehends five counties, namely, Galway, Roscommon, Mayo, Sligo, and Leitrim.

Though Ireland lies pretty far north, yet the air is more temperate than in more southern countries, but it is very moist, from the frequent rains that fall there-

therein ; and the winter is long, beginning early and ending late. But it does not consist so much in the extremity of cold, as the frequency of rain ; for the cold is so moderate, that all sorts of cattle may remain in the fields all the year, both night and day, there being generally but little frost or snow. Besides the rain, the west winds are very frequent and violent, which often end in storms ; and there have been instances of their being so great, that the inhabitants of the flat countries have suffered greatly by inundations. When the spring commences, which is generally towards the end of April, the sky is serene, and the air dry for five or six weeks, and then frequent showers begin to fall again. They have likewise fine weather towards the end of autumn for five or six weeks, which happens very opportunely for the getting in their harvest. This country is extremely boggy in many parts, which, no doubt, contributes greatly to the moisture of the air ; and if these lands were drained, it would very probably contribute not only to the health, but to the plenty of the island. The soil in most places is abundantly fruitful, and fit for pasture or tillage. They feed a great number of horned cattle, with the beef of which a great number of ships from England are victualled. The ground is likewise proper for hemp and flax, which it now produces in great plenty, to the advantage of their now flourishing linen manufactures. This country likewise abounds in wool, of which they export a vast quantity, both wrought and unwrought, particularly in yarn. The hills and mountains of Ireland are distinguished by the names of Knock, Slieve, and Beinn ; the first signifying a low hill, standing singly ; the second a craggy high mountain, ascending gradually, and continued in ridges ; and the last a mountain of the largest size, ending in a sharp abrupt precipice. The first sort of hills may be seen for ten miles in length, from Kells in the county of Meath, to Bailborough in the county of Cavan, as also about Down-Patrick. The second kind of mountains, that is, those that are very high, are but few in number ; those of Carlingford extending to Dundalk, best deserve this character, for they may be seen at the distance of forty miles. There are likewise some about Lough-Sully, in the northern parts of the county of Donegall, and likewise the Curleus, which separate the counties of Sligo and Ros-

common in the province of Connaught. The Mangerran mountains in the county of Kerry, the Croagh-Patrick in the county of Mayo, the Gaulty mountains in the county of Tipperary, the Slieubloom, which extends in a ridge through part of the King's and Queen's counties, and part of Tipperary, the Brandon mountains in the county of Kerry, Slieugalen in the county of Tyrone, the large mountains in the county of Wicklow, particularly the Sugar-loaf hill, the mountains of Mourne and Iveah, in the county of Downe, which are reckoned amongst the highest of the kingdom, are of the sort which end in an abrupt precipice. These mountains in general are of great advantage to the inhabitants, as being the cause of springs and rivers, and as they are the beds of mines, minerals, coals, quarries of stone, slate, and marble, veins of iron, lead, and copper, in all which they abound.

In Ireland there are many loughs, or lakes, which are more frequent in the provinces of Ulster and Connaught, than in other parts of the kingdom. The smaller lakes in the county of Downe are, Lough Rin, Lough Dinny, and Lough Carnan, the last of which is remarkable for being the scene of the massacre in 1641. In the county of West-Meath are, Lough Line, Lough Direvaugh, Lough Fiele, Lough Iron, Lough Banian-Anagh, and Lough Drin, which last has trouts, which occasion vomiting. In the county of East-Meath is Lough Romar ; in the county of Cavan, Lough Silline ; in the county of Donegall, Lough Fin and Lough Derg, in an island of which the Papists pretend St. Patrick's Purgatory is yet to be seen.

Perhaps no country in the world abounds more in spacious and commodious harbours, inasmuch, that it would take up a great deal of room only to mention them. There are likewise many considerable rivers, some of them navigable a great way in-land. The names of the most considerable are, the Barrow, the Neor, the Squir, the Black-Water, the Ban, the Lee, the Boyne, and the Shannon. This last is the largest and the noblest of them all, and rises out of a ridge of mountains, called Slieu-Neren, in the county of Leitrim, where it forms a considerable lough. It divides the kingdom as it were into two peninsulas, and receives a great number of lesser rivers in its passage.

The trade of this kingdom might be very great, if it was not for rivalling England in some manufactures, which are for that reason forbid to be wrought. The chief exports consist in linen cloth and yarn, lawns and cambricks, which the English laws give great encouragement to. To these may be added wool and bay-yarn, which are allowed to be exported into England only, as also beef, pork, green hides, tanned leather, dried calf-skins, tallow, butter, candles, cheese, ox and cow horns, ox-hair, horse-hair, lead, copper-ore, herrings, dry-fish, rabbit-skins, otter-skins, goats-skins, salmon, and a few other particulars. Though Ireland was formerly over-run with woods, they have been so cleared away lately, that they have not now timber enough for common uses, for which reason the iron-works have suffered very much, inasmuch, that the inhabitants have been obliged to search for wood in the bogs and morasses.

Ireland has produced many shining geniuses, and their bravery and military skill is well known, especially when they serve in the armies abroad. In regard to the language, the Welsh and the native Irish would be the same, if they had received no mixture from other tongues. The established religion is the same of that in England, only there are yet great numbers of Roman Catholics, besides Presbyterians, Baptists, and Quakers. There is but one university in Ireland, and that is at Dublin, which consists of one college only, founded by queen Elizabeth.

The curiosities of Ireland are, its exemption from serpents, and other venomous creatures, which the credulous think is owing to a miracle wrought by St. Patrick; but this was mentioned by Solinus, some years before St. Patrick existed. The Irish wolf-dogs are remarkable for their great strength and size, and the goshawks and ger-falcons are said to be the finest in the world. The latter is the largest bird of the falcon kind, and approaches to the size of a vulture. The moose-deer, or at least their horns, have been discovered under ground, in bogs, of an immense size. But the most stupendous and surprising curiosity, is the Giants Causeway, in the county of Antrim. It is of a triangular shape, and extends from the foot of a steep hill into the sea, no body knows how far; however, the length at low water is six hundred feet; it consists of many thousand pillars, of differ-

ent forms, some of them being triangular, and so on to octangular, but most of them are pentagonal and hexagonal, though all irregular and of unequal sizes, from sixteen to twenty-six inches in diameter: each pillar or column is made up of several joints, or pieces, from twelve to twenty-four inches long, the end of one being concave, and the other convex. The height of these is from thirty-two to thirty-six feet high above the strand, but how far they reach under ground is unknown, though they have been traced to the depth of eight feet.

The government of Ireland differs little from that of England, the kings of England always sending lord-lieutenants, or viceroys, to administer public affairs. They have likewise their houses of parliament in the same manner. They have the same law-courts as in England, called the chancery, king's bench common-pleas, and exchequer. They have likewise judges who go the circuits, and justices of the peace in the same manner as with us. But the chief person of every county is the high sheriff.

It is the general opinion that the first inhabitants of Ireland were colonies from Britain, tho' others think they came from Gaul. The first colony that assumed the regal title were called Firbolges, which is the same as Belgians, supposed to come from the Belgæ of Britain, and are said to have settled in Ireland in the year of the world 2657, and ruled eighty years under nine kings. These were dispossessed by the Tuath de Danans, or Danonians, a people from Britain, in the year of the world 2737, who governed Ireland one hundred and ninety-seven years, during the reigns of nine monarchs, when the great revolution was brought about by the Millefans, in the year of the world 2934. These are said to have come from Spain, and having vanquished the Danonians, were rulers of Ireland for two thousand nine hundred and eighty-seven years, during the reigns of one hundred and sixty-six kings, till the year of Christ 1172. St. Patrick is said to have preached the Gospel in Ireland, and to have converted a great part of the nation to Christianity in and after the year 432. In 795 they were invaded by the Danes or Norwegians, with various success, till the arrival of the English; in 964 Edgar king of England subdued a great part of Ireland, with the city of Dublin; in 1014 there was a bloody battle between Bryan Boro, king of

of Ireland, and Cittrick the Dane, king of Dublin, when the former obtained the victory. In 1110 the Romish form of worship was settled in Ireland; and in 1168 Dermond Mack Murrough king of Leinster, being a cruel tyrant, was deposed, and went over to Henry II. then in Aquitain, at war with France, to implore his aid, who gave Dermond credentials; after which he went to Bristol, inviting the English to assist him; and in May 1169 there were got together thirty knights, sixteen jacks or light-coats of mail, and about three hundred archers and footmen, who landed at Wexford, and they being joined by five hundred of Dermond's men, that town was taken after four days resistance: afterwards other fresh recruits arriving, they besieged and took Waterford. Then they summoned Dublin, and became masters of the city, when they made a great slaughter of the citizens, and got a great booty. A few years after this, that is in 1172, king Henry sailed for Ireland, with two hundred and forty ships, and landed at Waterford, which he took, and from thence marched to Dublin, which was surrendered into his hands; and this was soon followed by the submission of the whole kingdom. He introduced the laws of England, and first held a parliament at Dublin, distributing large tracts of land to his grantees and followers. In 1173 there was a rebellion, which was soon quashed by his return back from England. In 1314 the king of Scotland endeavoured to divert the English arms from his own country, by sending his brother Edward Bruce to invade Ireland, who had such success, that in 1316 he was crowned king of Ireland at Dundalk. After which he ravaged the country through which he passed towards Waterford, but was obliged to march back to Ulster; his forces were defeated by an English general, and Bruce himself was slain, with two thousand of his men. Thus an end was put to this revolution, and the Scotch government in Ireland. There were afterwards various rebellions with different success, but none so formidable as in the reign of queen Elizabeth, when the Irish rebels were supported by forces from Spain; but they were routed by the lord deputy Mountjoy before Kinsale, and the Spaniards were forced to leave the kingdom. In 1608 there was another rebellion, begun by Chaur O'Dogherty, but he being shot accidentally, some of his adherents were taken and

executed. The rebellion and massacres of 1641 exceeded all the cruelties that were ever perpetrated; but at length the Irish rebels were totally subdued by Oliver Cromwell, and an end was put to the war by the confiscation of many of their estates in 1653. King James II. encouraged by the great number of papists, entered this kingdom, and restored all the forfeited estates; but king William brought them back to their obedience in two successful battles, and the estates of great numbers of Irish nobility and gentry were adjudged to be forfeited. See *Dublin*.

IRIS, the RAINBOW, in physiology.

IRIS, in anatomy, the anterior coloured part of the nvea of the eye.

IRIS, in botany, a perennial plant with long narrow leaves, standing edgewise to the stalk.

IRIS, the flower-de-luce, common iris, or orrice, in botany, is a native of the mountainous parts of Germany, common in our gardens, and flowers in June.

The roots of this plant are a strong irritating cathartic; in which intention, their expressed juice has been given in hydropic cases, from one or two drams to three or four ounces, diluted largely with watery or vinous liquors, to prevent its inflaming the throat.

The bluish expressed juice of the flowers changes on being inspissated, especially if a little lime water is added, to a fine green; and in this form is directed, in foreign pharmacopœias, for tinging some of the unctuous compositions called odoriferous or apoplectic balsams.

IRIS, Florence orrice, supposed to be only a variety of the foregoing, occasioned by difference of climate; distinguishable from it in our gardens, by the flowers being white, and the leaves inclining more to bluish. The shops are supplied from Italy with dried roots superior to those of our own growth, in oblong flattish pieces freed from the fibres and brownish bark, externally of a whitish colour, with brownish specks, internally inclining to yellowish, easily reducible into farinaceous yellowish white powder.

This root, in its recent state, does not seem to differ much from the preceding; being, like it, nauseous, acrimonious, and purgative, though not quite in so great a degree, and losing these qualities on being dried. The dry root, as met with in the shops, has an unctuous, bitterish, pungent taste, not very strong, but very dura-

ble in the mouth ; and a light agreeable smell, approaching to that of violets. The dry root is used in perfumes ; in sternutatory powders, for communicating a grateful flavour, somewhat like raspberries, to wines and to spirits ; and medicinally in disorders of the breast, for attenuating viscid phlegm, and promoting expectoration.

* IRIS, in fabulous history, daughter of Thaumas and Electra, and the sister of the Harpies. She was the messenger of Juno, as Mercury was of Jupiter, and is represented as of surprising beauty ; for the ancient poets represented that fine appearance in the heavens, which we call the rainbow, under the name of Iris, and being at a loss how to account for the production of this seeming phenomenon, it was called the daughter of Thaumas.

IRON, *Mars*, in natural history, a greyish metal, soon tarnishing in the air to a dusky blackish hue, and in no long time contracting a yellowish or reddish rust. It is the most sonorous of the metals except copper ; the hardest and most elastic of them all ; hence its excellence for mechanic instruments ; it is made into tools, by which all the others are filed, drilled, and cut ; and is the only one that strikes sparks with flint. It spreads difficultly under the hammer, but may be extended to a great degree, drawn into wire, as slender as the finest hairs : it is more easily malleable when ignited than when cold ; whilst some of the other metals, though ductile when cold, become quite brittle by heat. It is lighter, considerably, than copper ; and a little heavier than tin. It is the only metallic body which attracts, or is attracted by, the magnet, one of its own ores.

Iron grows red-hot much sooner than any other metal, and this not only from the application of actual fire, but likewise from strong hammering, friction, or other mechanic violence. It nevertheless melts the most difficultly of all the metals ; requiring, in its most fusible state, an intense bright white heat. When perfectly malleable, it is not fusible at all, without additions, or the immediate contact of the burning fuel ; and when melted, it loses that quality, which deprives it at the same time of the other, as if fusibility and malleability were in this metal incompatible.

Solutions of iron made in acids give a yellow stain to linen, &c. and strike a black colour with galls and other vegetable

astringents. These are very valuable properties of iron to the calico-printer, the stainer of leather, wood, &c. and the dyer. For linen and leather, the metal is commonly dissolved in sour whey or small beer ; for dying, the vitriol is made use of. This metal affords also, in its calces, red and yellow pigments to the painter ; and a fine blue in the preparation, called from the place where it was first discovered, Berlin or Prussian blue. A slight solution of vitriol has been employed by some as an assay liquor for distinguishing French brandies from common spirits prepared in imitation of them ; French brandy having usually an astringent impregnation from the oaken casks in which it has been kept, and hence striking a bluish or black colour with the chalybeate solution ; whilst spirits tinged only with molasses, burnt sugar, &c. give no such colour. The principle on which the blue colour depends, shews that it is no certain test : all spirits will exhibit it if impregnated with astringents ; and French brandies will not, without such impregnation.

Iron is exceeding rarely, if ever, found native in the earth. Mr. Lewis says he never saw a specimen of pure native iron ; but the masses which have been shewn him for such, were either not attracted by the magnet, or not dissoluble in aquafortis. Its ores on the other hand are extremely plentiful in almost all parts of Europe : but South America, so rich in gold and silver, has little of this most useful metal. The richest ores of iron are compact and ponderous, of a brownish, reddish brown, or red colour : they scarcely ever participate of perfect sulphur, the pyritæ excepted, and contain but little foreign matter : such are, the magnet, the hæmatites or blood-stone, the common iron-stone, and ruddle. The running down of the iron-stone requires no particular management, a strong charcoal fire being the principal point.

Smelting of IRON Ores. The ores of iron are commonly calcined previous to the fusion ; the harder ones, though they should contain nothing sulphureous or arsenical, requiring that process to render them pulverable. In the large works, a quantity of the ore is placed on the bottom of the wood or charcoal, intermingled with strata of the same kind of fuel ; the pile carried up to a considerable height, and set on fire.

The fusion is performed in furnaces twenty or thirty feet high, and eight or ten

ten feet wide in the middle, but narrower above and below. The furnace is charged at top with charcoal, and the fire excited by large bellows moved by water. When the whole internal surface appears of a strong white heat, the ore is thrown in, by little at a time, with charcoal over it, and commonly a portion of limestone, the true use of which is probably, not as has been generally supposed, to absorb sulphur, but to promote the fusion. The ore, gradually melting, drops down through the fuel into the receiver or bottom of the furnace, where a passage is open for taking off the scum or dross. The metal, now in strong fusion, is let out by a tap-hole, into furrows made in a bed of sand: the large mass, which sets in the main furrow, is called by the workmen a sow, and the lesser ones pigs of iron. Chimney-backs, stoves, garden-rollers, &c. are formed of this rough metal taken out of the receivers with ladles, and cast into moulds made of fine sand. Two or three tons of iron are run off in twenty-four hours: before the force of water was called in aid to work the bellows, scarce an hundred weight could be obtained in a day, and a large quantity of the metal was left in the dross: hence, in some places, the slags of the old works are now re-melted to advantage along with fresh ore. From the richness of the slags of different ores left by former times, some have been misled into an opinion, that the metal was regenerated in them.

From the great consumption of wood in this business, and its scarcity in some places where there are rich mines of iron, attempts have been made to substitute other fuels. Peat has been found to answer tolerably well: in some parts of England, a quantity of this has for a considerable time been mixed with the charcoal; and a patent has been lately obtained for running down the ore with peat alone. Pit-coal renders the iron hard and brittle: this inconvenience is said to be in a good measure prevented, by previously coaking the coal, as is customary to fit it for the drying of malt.

The impure iron, as run from the ore, is melted down in another furnace, intermixed with charcoal; a strong blast of air being impelled on the surface of the metal, by which its fusion is remarkably promoted. On discontinuing the action of the bellows, the iron thickens into a mass called a loop, which is conveyed under a large hammer raised by the motion of a

water-mill. The iron, beat into a thick square, is heated till ready to melt, and forged again: by a few repetitions of this process, it becomes completely malleable, and is at length formed into bars for sale. A large quantity of vitreous scoria separates both in the fusion and the forging: the rough cast iron, obtained from some ores, loses more than half its weight in being made into bars.

Preparation of IRON, in medicine, are,

1. The crude filings, reduced to an impalpable powder, greatly recommended in female disorders.

2. The crocus martis. See *Crocus*.

3. The flores martiales, or flowers of iron. See the article *Flos*.

4. The sal martis, or salt of iron, which is prepared thus: mix together a quart of water, and eight ounces of the oil of vitriol; pour the oil of vitriol in by a little at a time: put the mixed liquor into a glass vessel, and add to it four ounces of the filings of iron: when the ebullition is over, evaporate the liquor to a pellicle, and set it to shoot, there will then be a green vitriol or salt, found in fair crystals: dry them for use.

This salt is one of the most powerful preparations of this metal; it opens obstructions of all kinds, strengthens the viscera, is an excellent medicine in cachexies, and destroys worms.

5. Tincture of iron, with spirit of salt, is made thus: take filings of iron, half a pound; Glauber's spirit of sea salt, three pounds; rectified spirit of wine, three pints: digest the spirit of salt and filings together, without heat, as long as the spirit will work upon them; then after the fæces have subsided, pour off the clear liquor, evaporate it to one pound, and to this add the spirit of wine.

This has the same virtues as the crocus martis. See the article *Crocus*.

6. Chalybeate, or steel-wine, is made in the following manner: take filings of iron, four ounces; cinnamon and mace, of each half an ounce; of rhenish wine, two quarts: infuse them a month, without heat, often shaking the vessel, and then filter it off for use.

This wine is an excellent stomachic and aperient; a moderate glass may be drank once or twice a day, or it may be mixed in apozems of the aperient vegetables.

IRONY, in rhetoric is when a person speaks contrary to his thoughts, in order to add force to his discourse: whence Quintillian calls it *diversifilium*.

Thus,

Thus, when a notorious villain is scornfully complimented with the titles of a very honest and excellent person; the character of the person commended, the air of contempt that appears in the speaker, and the exorbitancy of the commendations, sufficiently discover the dissimulation or irony.

IRREGULAR, something deviating from the common forms, or rules; thus we say an irregular fortification, an irregular figure, &c.

IRREGULAR, in grammar, such inflections of words as vary from the general rules; thus we say, irregular nouns, irregular verbs, &c.

IRREGULAR BODIES are solids not terminated by equal and similar surfaces.

IRREGULAR COLUMN, in architecture, a column which does not only deviate from the proportions of any of the five orders, but whose ornaments, whether in the shaft or capital, are absurd and ill chosen.

ISAIAH, or *Prophecy of ISAIAH*, a canonical book of the Old Testament. Isaiah is the first of the four greater prophets, the other three being Jeremiah, Ezekiel, and Daniel. This prophet was of royal blood, his father Amos being brother to Azariah, king of Judah. The five first chapters of this prophecy relate to the reign of Uzziah; the vision, in the sixth chapter, happened in the time of Jotham: the next chapters, to the fifteenth, include his prophecies under the reign of Ahaz; and those that were made under the reigns of Hezekiah and Manasseh, are related in the next chapters to the end. The style of this prophet is noble, sublime, and florid. Grotius calls him the Demosthenes of the Hebrews. He had the advantage, above the other prophets, of improving his diction by conversing with men of the greatest parts and elocution, and this added a sublimity, force, and majesty to what he said. He impartially reproved the vices of the age in which he lived, and openly displayed the judgments of God that were hanging over the Jewish nation; at the same time denouncing vengeance on the Assyrians, Egyptians, Ethiopians, Moabites, Edomites, Syrians, and Arabians, who were instrumental in inflicting those judgments. He foretold the deliverance of the Jews from their captivity in Babylon, by the hand of Cyrus king of Persia, an hundred years before it came to pass; but the most remarkable of his predictions

are those concerning the Messiah, in which he not only foretold his coming in the flesh, but all the great and memorable circumstances of his life and death.

ISCHIUM, in anatomy, the name of a bone described under the article *innominata ossa*.

ISCHURY, *Ischuria*, in physic, a suppression of urine.

Women with child are often troubled with an entire suppression of urine; the most general causes of which are gravel and stone, an inflammation of the neck of the bladder owing to the piles, or a strangulation of the neck of the bladder, betwixt the os pubis and head of the child, when it is sunk very low.

In the two first cases, general remedies, as bleeding, emollient clysters, and gentle purges, with softening decoctions, are of great use, but nothing gives so speedy a relief as a catheter. But when the head of the child is sunk very low, and presses strongly against the os pubis, the catheter will not pass; and then the remedy is to put back the child's head, which immediately gives liberty to the urine to come away without using the catheter.

La Motte makes a distinction betwixt a suppression and retention of urine. In the latter case the patient has frequent motions to make water, without being able to do it. But in a total suppression of urine, the patient has seldom or never any inclination to make water; and if any happen, it is done in a moment: this last is the most dangerous.

To discharge the urine by a puncture of the bladder is never undertaken, when relief can be had from internal medicines, or the introduction of the catheter. Now the catheter cannot be introduced in the following cases: 1. When the neck of the bladder is greatly inflamed, whereby the urethra is contracted. 2. A caruncle, cicatrix, or hard tubercle may obstruct the passage. 3. The introduction of the catheter in old men is sometimes impracticable, from the stricture or wrinkles of the urethra. 4. From the detention of its spongy substance with blood. 5. From a scirrhusity or preternatural tumor of the prostate gland. Lastly, from a stone lodged in the neck of the bladder. Upon such occasions recourse must be had to this operation; and among the various methods made use of, Heister prefers the following, namely, to make an incision on the left side of the future of the peritonæum into the body of the bladder, so as not to injure

injure its neck, with a trochar and canula. After which the perforator is extracted, but the canula remains there for the more ready discharge of the urine, by which means both the operation and the cure are greatly facilitated. Nor is it improper to pass one or two fingers into the anus, for the better direction of the instrument into the bladder, and the preservation of the rectum.

When the cause is removed, the tube may be extracted, and the wound healed by the application of balsam of capivi.

* **ISIS**, in Pagan worship, was the wife of Osiris, and a famous goddess of the Egyptians, from whom all the goddesses of the Greeks and Romans were formed; whence she was called Myrionyma, the goddess with a thousand names. The Egyptians celebrated the festival of this goddess with the utmost solemnity, and her worship was also introduced among the Greeks and Romans, who erected temples to her.

ISINGLASS, *Ichthyocolla*, in the materia medica, &c.

ISLAND, a tract of dry land, encompassed with water, in which sense it stands contradistinguished from continent, or terra firma.

ISLE, in general, denotes the same with island, only frequently used in a diminutive sense.

ISLES, in architecture, denote the sides or wings of a building.

ISOCHRONAL, **ISOCHRONE**, or **ISOCHRONOUS**, is applied to such vibrations of a pendulum, as are performed in the same space of time, as all the vibrations or swings of the same pendulum are, whether the arches it describes be longer or shorter: for when it describes a shorter arch, it moves so much the slower, and when a long one, proportionably faster.

ISOSCELES TRIANGLE, in geometry, a triangle which hath two equal sides.

ISPIDA, the king-fisher, in ornithology, a genus of the picæ-order of birds. This is a very numerous genus, the species of which are chiefly distinguished by their size and different colours.

ISSUE, in law, has several significations, it being sometimes taken for the children begotten between a man and his wife; sometimes, for profits arising from amercements and fines; and sometimes, for the profits issuing out of lands or tenements: but this word generally implies the conclusion, or point of matter, that issues from the allegations and pleas

of the plaintiff and defendant in a cause tried by a jury of twelve men.

ISSUES, in surgery, small artificial apertures made in a fleshy part of the body, to drain off superfluous or noxious humours.

An issue should be made in the middle of a muscle, that the necessary motion of the part may not incommode or put the patient to pain. The best way of making issues in children, is by applying a small piece of blistering plaster, as big as a pea, to the part; and letting it lie on for a few hours, it will cause a blister: upon raising the skin, apply a pea and compress it tight with a bandage, till by degrees it sinks in and forms an issue.

ISTHMIA, or **ISTHMIAN GAMES**, one of the four solemn games which were celebrated every fifth year in Greece; so called from the Corinthian isthmus, where they were kept.

These games, according to some, were instituted in honour of Palæmon, or Melicertes, the son of Athamas king of Thebes, and Ino. Others report, that they were instituted by Theseus, in honour of Neptune: others again are of opinion, that there were two distinct solemnities observed in the Isthmus, one to Melicertes, and another to Neptune. These games were held so sacred and inviolable, that when they had been intermitted for some time, through the oppression and tyranny of Cypselus, king of Corinth, after the tyrant's death the Corinthians, to renew the memory of them, employed their utmost power and industry. The victors were rewarded with garlands of pine-leaves; afterwards parsley was given them; but at length the pine was resumed, and to this was added the reward of one hundred silver drachmæ. These games were so celebrated, and the concourse at them so great, that only the principals of the most remarkable cities could have place in them. The Athenians had only as much room allowed them as the sail of a ship, which they sent yearly to Delos, could cover.

ISTHMUS, in geography, a narrow neck of land that joins two continents, or joins a peninsula to the terra firma, and separates two seas. The most celebrated isthmuses are those of Panama, or Darien, which joins North and South America; and that of Suez, which connects Asia and Africa; that of Corinth, of Crim Tartary, &c.

ITALIAN, the language spoken in Italy. This tongue is derived principally from the Latin; and of all the languages formed from the Latin, there is none which carries with it more visible marks of its original than the Italian. It is accounted one of the most perfect among the modern tongues, containing words and phrases to represent all ideas, to express all sentiments, to deliver one's self on all subjects, to name all the instruments and parts of arts, &c. It is however complained, that it has too many diminutives and superlatives, or rather augmentatives, but without any great reason: for if these words convey nothing farther to the mind than the just ideas of things, they are no more faulty than our pleonasm and hyperboles. The language corresponds to the genius of the people; they are slow and thoughtful, and accordingly their language runs heavily, though smoothly, and many of their words are lengthened out to a great degree.

The Italians have a great taste for music, and to gratify their passion this way, have altered abundance of their primitive words, leaving out consonants, taking in vowels, softening and lengthening out their terminations for the sake of the cadence. Hence the language is extremely musical, and succeeds better than any other in operas, and some parts of poetry; but it fails in strength and nerves: hence, also, a great part of its words borrowed from the Latin, become so far disguised, that they are not easily known again.

ITALIC CHARACTERS, in printing. See *Letter*.

ITALIC or **ITALIAN HOURS**, the twenty-four hours of the natural day, accounted from the sun-setting of one day, to the same again the next day.

ITALIC SECT, a party of ancient philosophers, founded by Pythagoras, so called, because that philosopher taught in Tarentum, Metapontus, Heraclea, Naples, &c. in Italy.

* **ITALY**, one of the principal countries of Europe, seated between seven and nineteen degrees of east longitude, and between thirty-eight and forty-seven degrees of north latitude. It is bounded on the north by Swisserland and the Alps, which separate it from Germany, on the east by the gulph of Venice, on the South by the Mediterranean Sea, and on the west by the same sea and the Alps, which separate it from France. It is said to have taken its name from an ancient king of Sicily.

Italy is said to resemble a boot in shape, and is in length, from north-west to south-west, six hundred miles and upwards; but the breadth is very unequal, being in the north, which is called the boot-top, four hundred miles in breadth, in the calf of the leg one hundred and twenty, and about the instep eighty miles. After the dismembering the Roman empire by the barbarians, the Goths possessed a great part of Italy, and after them the Lombards founded a very powerful kingdom there, towards the end of the sixth century, which lasted about two hundred years, and still retains the name of Lombardy. Charlemagne having driven away the Lombards, seized Upper Italy, of which he gave a considerable part to the pope, but Lower Italy, that is to say, the kingdoms of Naples and Sicily, were retained by the Greek emperors of Constantinople, who were drove away from thence by the Saracens and Turks. Italy is now in the possession of the following principal sovereigns, that is, the pope, the queen of Hungary, the republic of Venice, the great duke of Tuscany, the king of the two Sicilies, and the king of Sardinia. The principal rivers of Italy are, the Po, the Tiber, the Adige, and the Arno. This country is, beyond all doubt, one of the finest and best in the world; but it is not so well cultivated as it might be, and was formerly, partly from the great number of ecclesiastics, and partly from the exactions of their governors, who, by their oppressions, scarce make it worth while for the husbandman in some places to till the ground; however, the land is very fertile, and has properly acquired the name of the Garden of Europe. The air is very temperate and wholesome, unless in the State of the Church, and in some places on the sea-coast. It produces abundance of corn, rice, wine, oil, oranges, lemons, citrons, pomegranates, all sorts of fruits and flowers, honey, silk, and even cotton and sugar in the kingdom of Naples. The forests are full of all sorts of game, and the mountains of good pastures, which feed a great number of beasts. There are mines of sulphur, iron, and quarries of alabaster and all kinds of marble. Italy is a mountainous country, for, besides the Alps, there are the Apennine mountains, which run through its whole length, as also mount Vesuvius, which throws out stones, ashes, fire and smoke. It has also several great lakes, as the Majore, Lugano, Como, Isio, &c. As Italy, as has been said, is represented by the shape of a boot,

a boot, it is divided into three principal parts; the top of the boot contains the ancient Lombardy, in the calf are the territories of the Church and Tuscany, and in the small of the leg and foot the kingdom of Naples; to which may be added a fourth part, comprehending the islands; of which Sicily, Sardinia, Corsica, and the islands of Lippari are the principal. Besides the principal sovereignties already mentioned, there are several others, which we shall just mention: in the north of Italy are the duchies of Savoy, Piedmont, and part of Montferrat, subject to the king of Sardinia; the territory of Genoa, subject to the Genoese; the duchies of Milan, Mantua, and the rest of the duchy of Montferrat, are subject to the house of Austria; the duchy of Parma, is subject to the infant duke; the duchy of Modena to its own duke; and the large territories of Venice are subject to that republic. Tuscany is subject to the emperor. The pope's dominions almost surround the duchy of Tuscany and the state of Lucca. Lastly, the kingdom of Naples is subject to the king of the Two Sicilies. There are a great number of archbishopricks and bishopricks; and there are several universities, the most famous of which are at Salerno, Naples, Rome, Firmo, Macerata, Bologna, Siena, Pisa, Turin, Pavia, Padua, and Venice. There is but one language spoke in all Italy, which is a corruption of the Latin, and is thought to be the purest in Tuscany. The inquisition is established in all parts of Italy, to protect the Roman Catholic religion from the attempts of the reformed churches; however, there are foreign protestants in some places, who are allowed to live there on account of trade; and, for the same reason, there are Jews, Greeks, and Armenians, who are allowed the exercise of their religion. Properly speaking, Italy has no capital city, though Rome seems to deserve that title most; but there are several who are distinguished by some particular epithet according to their supposed predominant qualities; thus Rome is called the Holy, Naples the Noble, Florence the Fair, Genoa the Superb, Milan the Great, Ravenna the Ancient, Venice the Rich, Padua the Learned, Bologna the Fat, Leghorn the Trade, Verona the Charming, Lucca the Pretty, and Casal the Strong. The Italians reckon their hours differently from other countries, for the first hour after sun-set is the beginning of the twenty-four, which end at the same the next evening. The Italians have

a great number of good as well as bad qualities, for they are polite, prudent, ingenious, politic, and are not wanting in valour; but having enjoyed the happiness of peace a great while together, they are addicted to luxury and the most criminal pleasure, and have fallen into a softness directly opposite to the military genius of the ancient Romans: they are extremely revengeful; and there are some quarrels between families scarce ever to be reconciled.

ITALIAN ISLANDS, those islands that lie in the Mediterranean sea, the chief whereof are, Sicily, subject to the King of the Two Sicilies, or Naples; Sardinia, subject to that King; and Corsica, subject formerly to the Genoese; by them lately ceded to France, which power subdued the inhabitants by the force of its arms.

ITCH, a disease of the skin which is corrupted by the oozing out of certain sharp humours, which gather into pustules, and occasion a purigo or itching.

The itch is either moist or dry, which, appearing in the joints principally at first, gradually spreads through the rest of the body, except the head.

This disease first appears in a reddish roughness of the skin; which is succeeded by pimples, that let out matter or a sharp ichor; and the exulceration is attended with itching, and spreads by contagion. It may justly be called an animated disease, as owing its origin to small animals. For there are certain insects, so very small as hardly to be seen, without the assistance of a microscope, which deposit their eggs in the furrows of the cuticle, as in proper nests; where, by the warmth of the place, they are hatched in a short time, and the young ones coming to full growth penetrate into the very cutis with their sharp heads, and gnaw and tear the fibres. Their bitings cause an intolerable itching, which brings on a necessity of scratching; whereby the part is torn, and emits a thin humour, which concretes into hard scabs; whilst the little worms constantly burrowing under the cuticle, and laying their eggs in different places, spread the disease.

Hence the reason manifestly appears why the disease is communicated by the linen, wearing apparel, gloves, &c. which were used by infected persons: for the eggs which had stuck to soft substances of this kind, are rubbed into the furrows of the cuticle, and are there hatched and nourished.

J U B

Now what is of greatest moment in this theory is, that the knowledge of the true cause of the disease naturally points out the cure: for neither cathartics nor sweeteners of the blood are of any service here; the whole management consists in external applications, in order to destroy these corroding worms, and this is easily affected: wherefore, first let the patient go into a warm bath, and then let the parts affected be anointed every day, either with the ointment of sulphur, or the ointment with precipitate of mercury, which is less offensive to the olfactory organs; instead of which a liniment may be made of orange flowers, or red roses, the mercurial red corrosive, and hog's lard, pounded together, which is of a very pleasant smell, and of equal efficacy. *Mead.*

ITINERANT JUDGES, a name formerly given to those judges who were sent into several counties to hear causes.

JUBILEE, among the Jews, denoted every fiftieth year, being that which followed the revolution of seven weeks of years; at which time all slaves were made free, all debts annihilated, and all lands, &c. reverted to their ancient possessors; all agriculture was forbid, and the poor intitled to all the productions of the earth that year. The privilege extended only to original Israelites.

According to Masius, the word is derived from Jubal, the inventor of musical instruments; whence the words *Jobel*, and *Jubilee*, signified the year of deliverance and remission, because proclaimed with the sound of one of those instruments, which at first was no more than the horn of a ram.

The Christians, in imitation of the Jews, have likewise established Jubilees, which began in the time of pope Boniface VII. in the year 1300, and are now practised every twenty-five years; but these relate only to the pretended forgiveness of sins, and the indulgences granted by the church of Rome: together with the privilege of performing a thousand frolics in masquerade. The ceremony of the jubilee observed at Rome, begins in the following manner: the pope goes to St. Peter's church, to open the holy gate, which is walled up, and opened only on this occasion; and, holding a golden hammer in his hand, he knocks at the gate three times, repeating these words, *Aperite mihi portas justicie*, &c. *Open to me the gates of righteousness; I will go into them, and will praise the Lord.* Psal. cxviii. 19. upon

J U D

which the masons fall to work, and break down the wall that stops up the gate: which done, the pope kneels down before it, and the penitentiaries sprinkle him with holy water. Then, taking up the cross, he begins to sing *Te Deum*, and enters the church, followed by the clergy. In the mean time, three cardinal-legates are sent to open the three other holy gates which are in the churches of St. John of Lateran, St. Paul, and St. Mary the Greater. When the holy year is expired, the holy gates are shut in this manner: the pope, after he has blessed the stones and mortar, lays the first stone, and leaves there twelve boxes of gold and silver medals; after which the holy gates are walled up as before, and continue so till the next jubilee.

JUDAISM, the religious doctrines and rites of the Jews.

JUDE, or the *general Epistle of JUDE*, a canonical book of the New Testament, written against the heretics, who by their disorderly lives and impious doctrines, corrupted the faith and good morals of the Christians. St. Jude draws them in lively colours, as men given up to their passions, full of vanity, conducting themselves by worldly wisdom, and not by the spirit of God.

In the early ages of Christianity, several rejected this Epistle, because the apocryphal books of Enoch and the ascension of Moses are quoted in it. Nevertheless, it is to be found in all the ancient catalogues of the sacred writings; and Clement of Alexandria, Tertullian, and Origen, quote it as written by Jude, and reckon it among the books of sacred Scripture.

JUDGE, an officer appointed by the sovereign powers of any country to distribute justice to their subjects, which they themselves cannot do in person.

Book of JUDGES, a canonical book of the Old Testament, so called from its relating the state of the Israelites under the administration of many illustrious persons who were called judges, from their being both the civil and military governors of the people, and who were raised up by God upon special occasions, after the death of Joshua, till the time of their making a king. In the time of this peculiar polity, there were several remarkable occurrences, which are recorded in this book. It acquaints us with the gross impiety of a new generation which sprung up after the death of Joshua, and gives us
a short

a short view of the dispensations of heaven towards this people, sometimes relieving and delivering them, and at others, severely chastising them by the hands of their enemies.

The book of Judges is usually divided into two parts: the one containing the history of the judges from Othniel to Samson; which ends with the sixteenth chapter: the other containing several memorable actions, which were performed in or about the time of the judges, from the seventeenth chapter to the end of the book. The author of this book is wholly unknown; some ascribe it to Samuel, others to Hezekiah, and others to Ezra.

JUDGMENT, among logicians, a faculty or rather act of the human soul, whereby it compares its ideas, and perceives their agreement or disagreement.

JUDGMENT, in law, the sentence of the judges upon a suit, &c.

JUDGMENTS *for crimes*, in case of treason or felony, must be by an express sentence, an out-lawry, or abjuration: and no judgment can be inflicted contrary to law, or that is not appointed by act of parliament.

JUDGMENT *for debts*, is acknowledged by a person's giving a general warrant of attorney to any attorney of the court in which it is to be acknowledged, to appear for him at the suit of the party to whom the same is to be done, and to file common bail, receive a declaration, and then to plead, *non sum informatus*, I am not informed; or to let it pass *nihil dicit*, he says nothing; upon which judgment is entered for want of a plea.

St. IVES or **St. IIES**, in Cornwall, upon the sea-banks, and as it were hangs over the sea like a tongue; it was formerly called Pendennis, is a neat town for this county; the inhabitants are wealthy, and have a good trade in pilchards, and the haven below it is called **St. Iies Bay**, which is now but inconsiderable, by reason of the bay's being almost choaked up with sand; it is a borough that sends two members to parliament; king Charles I. anno 1641, renewed their charter, by which he grants them to have a common seal, a mayor, twelve capital, and twenty-four inferior burgesses, a recorder, town clerk, &c. of which the mayor in his office, and a year after, the senior burgess and recorder, shall be always justices of the peace; they have two markets weekly on Wednesday

and Saturday; the election for members of parliament is made by the corporation, and all the inhabitants that pay scot and lot. Distance from London 229 computed, and 279 measured miles.

St. IVES, in Huntingdonshire, is a fair, large, and ancient town, that has a very good market for cattle weekly on Monday; distant from London 49 computed, and 57 measured miles.

JUG, an earthen pot, commonly made with a swelling in the belly, and a slender neck; those made straight or cylindrical being called mugs; also a pleasant, familiar nick-name for Joan, or any country woman.

JUGALE, in anatomy, the cheek bone.

JUGERUM, in Roman antiquity, a square of one hundred and twenty Roman feet; its proportion to the English acre being as ten thousand to sixteen thousand and ninety-seven. See *Measure*.

JUGULAR, in anatomy, an appellation given to two veins of the neck, which arise from the subclavians. 1. The external jugular, distributed over the external parts of the head, and which, in its several parts, receives different denominations from them, as the frontal, temporal, occipital, &c. vein. 2. The internal jugular, which gives ramifications to the larynx, the pharynx, the muscles of the os hyoides, and to the tongue; those which are under its vertex being called raninx. But besides these branches, its trunk terminates in a diverticulum, called the jugular sack, and brings back the blood from the sinuses of the dura mater, and from the brain. See *Vein*.

There are also certain glands in the anterior part of the neck, called jugular.

JUICE denotes the sap of vegetables, when expressed.

JUICE is also used to denote the liquors of animals, as the nervous juice, the pancreatic juice, &c.

IVINGO, a pleasant town in Buckinghamshire, seated among woods, with a weekly market on Friday; distant from London 30 computed, and 45 measured miles.

JUJUBES, *Jujuba*, in pharmacy, a fruit of the plum kind, about the size and shape of an olive, consisting of a pretty thick reddish yellow skin, a whitish fungous pulp, and a wrinkled stone of an oblong figure. It is the produce of a prickly tree, with three-ribbed leaves, and herbaceous or yellowish flowers, sometimes

J U L

found wild, and commonly cultivated in the southern parts of Europe.

JULEP, in pharmacy, an alterative medicine, unknown to the ancient Greeks, and invented by the Arabians, composed chiefly of distilled waters, &c. and sweetened with sugar or proper syrups.

It was so called, because usually prepared of sweet ingredients, julep signifying, in the Persian language, a sweet potion.

JULIAN PERIOD, in chronology, a period so called, as being adapted to the Julian year.

It is made to commence before the creation of the world. Its principal advantage lies here, that the same years of the cycles of the sun, moon, and indiction, by which three cycles it was made to consist by Joseph Scaliger in 1580, belonging to any year of this period, will never fall together again till after the expiration of seven thousand nine hundred and eighty years. There is taken for the first year of this period, that which hath the first of the cycle of the sun, the first of the cycle of the moon, and the first of the indiction cycle, and so reckoned on.

The first year of the Christian æra is always, in our systems of chronology, the 4714th of the Julian period.

To find what year of the Julian period any given year of Christ answers to: to the given year of Christ add 4713, because so many years of the Julian period were expired A. D. 1; and the sum gives the year of the Julian period sought.

On the contrary, having the year of the Julian period given, to find what year of Christ answers thereto: from the year of the Julian period given, subtract 4713, and the remainder will be the year sought.

JULIAN YEAR, that formerly used in England and several other countries, called the old year, introduced by Julius Cæsar, which for three years together has but three hundred and sixty-five days, but every fourth year three hundred and sixty-six days, upon account that six hours and three hundred and sixty-five days were the mean solar year, and four times six hours made one natural day; but this, by experience, is found to be too much by about eleven minutes, so that in about one hundred and thirty-one years this account will be one day too late, which occasions the difference between the Julian and Gregorian account or year.

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JULIERS DUCHY, in the circle of Westphalia, in Germany, bounded by Prussian Guelderland on the north, by the electorate of Cologne on the east, by the electorate of Triers on the south, and by the bishoprick of Liege and the Netherlands on the west, being about 60 miles long, and 30 broad, consisting of good arable and pasture grounds, and abounding in cattle. It produces also great quantities of woad, or wad, for dying, as well as corn. This country, with the duchy of Berg, have been much contended for by the electors of Brandenburg, Saxony, and the elector Palatine; but the electors of Brandenburg and Saxony suffer the elector Palatine to possess it at present.

JULUS, an insect, called in English the gally-worm, which is esteemed a very valuable medicine in the jaundice, and suppression of urine.

JULY, the seventh month of the year, during which the sun enters Leo.

It was called Julius, by Marc Antony, from the surname of the dictator C. Cæsar, who was born in this month. It was before called Quintilis, as being the fifth month of the year in Romulus's calendar, which began in March.

About the 30th day of this month, what are commonly called the dog-days begin, which by reason of the sultriness of the air is seldom so healthful as the other seasons of the year. The painters represent this month by a strong robust man, having a light yellow jacket on, eating cherries, or other red fruits, which are now in their full prime and ripeness, with a swarthy, sun-burnt face, neck, and hands, his head crowned with a garland of centaury, and Time bearing a scythe on his shoulder, with a bottle hanging at his girdle, and a lion by his side.

JUMENTA, in zoology, the name by which Linnæus calls the fifth order of quadrupeds, the characteristic of which is, that the teeth of all the animals belonging to it are placed in a different manner from the other five orders.

To this order belong the elephant, rhinoceros, hippopotamus, horse, and hog.

JUNCUS, the rush, in botany. Authors have divided the several species of juncus into what they call rushes, and rush-grasses, from their having or wanting leaves; but the fructifications in both are the same.

It is a dry smooth stalk, brought to us along with the leaves, and sometimes the flowers, from Turkey and Arabia, tied up
in

in bundles about a foot long. The stalk, in shape and colour, somewhat resembles a barley straw; it is full of a fungous pith, like those of our common rushes: the leaves are like those of wheat, and surround the stalk with several coats, as in the reed: the flowers are of a carnation colour, striped with a lighter purple. The whole plant, when in perfection, has a hot bitterish, not unpleasant aromatic taste, and a very fragrant smell; by long keeping, it loses greatly of its aromatic flavour. Distilled with water, it yields a considerable quantity of essential oil. It was formerly often used as an aromatic, and in obstructions of the viscera, &c. but at present is scarce otherwise employed than as an ingredient in mithridate and theriaca.

JUNE, the sixth month by the vulgar computation, and formerly the fourth, but now also the sixth by the civil reckoning. The ancients represent this month by a young man clothed in a mantle of a deep green colour, having his head ornamented with a coronet of bents, king-cobs, and maiden-hair, holding in his left-hand an angle, in his right Cancer, and on his arm a basket of summer-fruits.

JUNETING, JENNETTING, or JOHN-APPLE, a small eating apple that is first ripe in the month of June.

JUNIPER, in botany, an ever-green tree or bush, clothed with slender, narrow, stiff sharp leaves, like prickles, which stand generally three together: the flowers are a kind of small scaly catkins, growing on one plant; the fruit, round berries, growing on a different one, containing each three oblong irregular seeds. It is common on heaths in different parts of Europe; and is found, at all seasons of the year, both with unripe green or red berries, and with ripe bluish black ones.

The berries are brought chiefly from Holland and Italy: they should be chosen fresh, not much thrivelled, and free from mouldiness, which they are very subject to contract in keeping. They have a moderately strong, not disagreeable, smell, and a warm pungent sweetish taste, which, if they are long chewed or previously well bruised, is followed by a considerable bitterness. Distilled with water, they yield a yellowish essential oil, very subtle and pungent, in smell greatly resembling the berries; in quantity, if they have been sufficiently bruised, about one ounce from forty; the remaining decoction,

inspissated to the consistence of a rob or extract, has a pleasant, balsamic, sweet taste, with a greater or less degree of bitterness. A part of the flavour of the berries arises also in distillation with rectified spirit; the inspissated tincture consists of two distinct substances; one oily and sweet, the other tenacious, resinous, and aromatic.

These berries are useful carminatives, detergents, and diuretics. The distilled oil is a very stimulating diuretic, approaching in quality to that of turpentine, like which, it impregnates the urine with a violet smell: the spirituous extract gives the same kind of smell; as does likewise the berry in substance, in a lower degree; but the watery extract or rob, as being divested of the oil, has no such effect. This last may be used with advantage in cases where the more stimulating preparations would be improper; as in catarrhs, debilities of the stomach and intestines, and difficulties of the urinary excretions, in persons of an advanced age. Among the aromatics that have been tried in conjunction with juniper berries, sweet fennel seeds and carraway seeds seem the best adapted to improve their flavour: a cordial water is prepared in the shops, by drawing off a gallon of proof spirit from a pound of the berries, and an ounce and a half of each of the seeds. The water is strongly impregnated with the volatile virtue of the berry; to which the more fixed ones may in many cases be usefully superadded, by mixing with it a proper quantity of rob.

We used to keep a distilled spirituous water of juniper in the shops; but the vulgar got an opinion of its being a pleasant dram, and consequently the making it became the business, not of the apothecary, but the distiller, who sold it under the name of geneva; but at present it is only a better kind that is made with the juniper-berry; what they commonly sell is made with no better ingredient than oil of turpentine, put into the still with a little common salt, and with the coarsest spirit they have, which is drawn off much below proof strength, and is consequently a liquor that one would wonder any people could accustom themselves to drink it merely for the sake of pleasure.

The juniper-berry is likewise an ingredient in the compound horse-radish water, tincture of jalap, tincture of senna, mithridate, and theriaca. The liquor remaining after

after the distillation of the oil, passed through a strainer, and gently exhaled to the consistence of a rob, proves a medicine of great utility, and in many cases is perhaps preferable to the oil, or berry itself. Hoffman is expressly of this opinion, and strongly recommends it in debility of the stomach and intestines, and says it is particularly of service to old people who are subject to these disorders, or labour under a difficulty with regard to the urinary excretion.

JUNCTO, or **JUNTO**, a company of conspirators, or a factious assembly of malcontents met together, either to exercise that authority which their rebellion has put in their power, or to consult of ways and means of carrying on and supporting their present and future designs.

JUNK, among sailors, certain pieces of old cable, &c. cut into different lengths, which are used to hang for fenders by the ship's sides, or else it is untwisted, and made into plates for cables, rope-yarn, or sinnet, and if it be rotten they make oakham of it.

JUNO, in Pagan worship, the sister and wife of Jupiter, and the goddess of kingdoms and riches; she is also styled the queen of heaven; she presided over marriage and child-birth, and was represented as the daughter of Saturn and Rhea. She married Jupiter; but was not the most complaisant wife; for that god was sometimes obliged to make use of all his authority to keep her in due subjection; and Homer observes, that on her entering into a conspiracy against him, he punished her by suspending her in the air with two anvils fastened to her feet, and golden manacles in her hands, which all the other deities looked on without a possibility of helping her. However, her jealousy made her frequently find opportunities of interrupting her husband in the course of his amours, and prompted her to punish with unrelenting fury Europa, Semele, Io, Latona, and the rest of Jupiter's mistresses. Jupiter himself having conceived, without any commerce with a female, Juno, in revenge, conceived Vulcan by the wind; Mars by touching a flower, pointed out to her by the goddess Flora; and Hebe by eating greedily of lettuces. Juno, as the queen of heaven, preserved great state: her usual attendants were Terror and Boldness, Castor, Pollux, and fourteen nymphs; but her most faithful attendant was the beautiful Iris, or the rainbow. Homer describes

her in a chariot, adorned with precious stones; the wheels of which were of ebony, and which was drawn by horses with reins of gold. But she is more commonly painted drawn by peacocks. She was represented in her temple at Corinth, seated on a throne, with a crown on her head, a pomegranate in one hand, and in the other a sceptre, with a cuckoo on its top. This statue was of gold and ivory.

JUNONIA, certain feasts celebrated in honour of Juno, at which time the maids of all ages ran races, and petitioned her to give them husbands; at Rome an altar was erected to her as the goddess of marriage, where the new-married couple offered either a white cow, geese, or ravens, from which they took the gall before they sacrificed, and threw behind the altar, to intimate that in that state no bitterness of spirit shall remain.

JUNTA, **JUNTO**, or **JUNCTO**, in matters of government, denotes a select council for taking cognizance of affairs of great consequence, which require secrecy.

IVORY, *Ebur*, the tusk, or dens exortus of an elephant, growing on each side of his trunk, in form of a horn. Each tusk is six or seven feet in length, and as thick as a man's thigh at the base, and almost solid; and both together sometimes weigh about three hundred and thirty pounds. It is much esteemed for its colour, polish, and the fineness of its grain when wrought. The ivory of the isles of Ceylon and Achem never becomes yellow, as that of the terra firma and the East Indies does; on which account the former is dearer. We have also fine ivory brought from Angola, Sumatra, &c. Large quantities of it are not taken in the East Indies immediately from the head of the animal, but found buried in the earth. The preparations of ivory have all the same virtues with those of harts-horn, and its raspings, in the same manner, as the shavings of harts-horn boiled into a jelly with water, and have the same restorative qualities.

Staining and marbling of IVORY yellow.—Boil it first in a solution of alum, in the proportion of one pound to two quarts of water: and then prepare a tincture of the French berries, by boiling half a pound of the berries, pounded, in a gallon of water, with a quarter of a pound of pearl ashes. After this tincture has boiled about an hour, put the ivory, previously boiled in the alum-water, into it, and let it remain there half an hour.

If turmeric root be used instead of the French berries, a brighter yellow may be obtained; but the ivory must, in that case, be again dipped in alum-water, after it is taken out of the tincture, otherwise an orange colour, not a yellow, will be produced from the effect of the pearl-ashes on the turmeric.

Staining IVORY green.—It must be boiled in a solution of verdigrise in vinegar, or of copper in aqua-fortis, prepared as above directed, a vessel of glass or earthen ware being employed for this purpose, till it be of the colour desired.

Staining IVORY red.—Take strong lime-water, prepared as for other purposes; and the raspings of Brasil-wood, in the proportion of half a pound to a gallon. Let them boil for an hour; and then put in the ivory, prepared by boiling in alum-water in the manner before-mentioned for the yellow; and continue it there till it be sufficiently coloured. If it be too crimson, or verge toward the purple, it may be rendered more scarlet, by dipping again in the alum-water.

Staining IVORY blue.—Stain the ivory first green, according to the manner above described; and then dip it in a solution of pearl ashes, made strong and boiling hot: but it must not be continued longer, nor dipped oftener, than is necessary to convert the green to blue.

The ivory may otherwise be boiled in the tincture of indigo, prepared as by the dyers; and afterwards in the solution of tartar.

Staining IVORY purple.—This colour is to be treated in the same manner as was directed for the red, except that logwood must be substituted in the place of Brasil-wood; and the use of the alum-water must be omitted wholly.

If a redder purple be wanted, a mixture of the logwood and Brasil must be employed, instead of the logwood alone. The proportion may be equal parts; or any less proportion of the Brasil, according to the colour desired.

Staining IVORY to imitate tortoiseshell.—The ivory to be stained must be first cut into proper plates, or scales, or other flat form. The following mixture must then be prepared: Take of quicklime two parts, and of litharge one; and temper them to the consistence of a soft paste with soap-lye. Put this paste over all parts of the ivory, except such as are proper to be left transparent, in order to the greater resemblance of the tortoise-shell. The ivory

must then remain thus covered with the paste till it be thoroughly dry; when the paste being brushed off, the ivory will be found partly opaque, and partly transparent, in the manner of tortoise-shell; and when put over a foil, of the kind of latten called assidue, will be scarcely distinguishable from it. It requires some degree of fancy and judgment, to dispose of the paste in such a manner as to form a variety of transparent parts of different magnitude and figure to look like the effect of nature; and it will be an improvement to add semi-transparent parts. This may be done by mixing whitening with some of the paste to weaken its operation in particular places; by which spots of a reddish brown will be produced, that if properly interspersed, especially on the edges of the dark parts, will greatly increase as well the beauty of the work, as its similitude with the real tortoise-shell.

* J U P I T E R, in Pagan worship, the father of gods and men, and the greatest of all their deities, was the son of Saturn and Rhea. That goddess perceiving her husband devoured her children as fast as she brought them forth, and being in pain for Jupiter, she substituted a stone in his room, which Saturn immediately swallowed. He was educated by the sound of the instruments of the Corybantes. Virgil tells us, that he was fed by the bees, out of gratitude for which he changed them from an iron to a golden colour. Some say, that his nurses were Amalthæa and Melissa, who gave him goats milk and honey; and others, that Amalthæa was the name of the goat who nourished him, and which as a reward for her great services was changed into a constellation. According to others, he was fed by wild pigeons, who brought him ambrosia from Oceanus; and by an eagle who carried nectar in his beak from a steep rock; for which he rewarded the former by making them the foretellers of winter and summer, and the last by giving him immortality, and appointing him his thunder-bearer. When grown up, he defeated the Titans, dethroned his father Saturn, and divided his kingdom with his two brothers; Jupiter had the earth, Neptune the sea, and Pluto hell. Jupiter had several wives, the first of which, named Metis, he is said to have devoured when big with child, by which he himself became pregnant, and Minerva issued out of his head, completely armed and fully grown. His second was Themis; the name of his third is not known; his fourth was the celebrated Juno,

J U P

Juno, whom he deceived under the form of a cuckoo, who to shun the violence of a storm fled for shelter to her lap. He was the father of the Muses and Graces; and had a prodigious number of children by his mistresses. He metamorphosed himself into a satyr to enjoy Antiope; into a bull to carry off Europa; into a swan to abuse Leda; into a shower of gold to corrupt Danae; and into several other forms to gratify his passions. He had Bacchus by Semele, Pallas by Thetis, Diana and Apollo by Latona, and was the father of Mercury, and the other gods.

JUPITER, 24, in astronomy, one of the superior planets, remarkable for his brightness.

This planet is situated between Saturn and Mars, and revolves about his own axis in 9 hours 56 minutes. His periodical revolution round the sun is performed in 4332 days 12 hours 20 minutes, or almost 12 years, in an orbit whose radius or semi-diameter is equal to 424 millions of miles. The inclination of the orbit to the plane of the ecliptic is $1^{\circ} 20'$. The place of the node $\odot 7^{\circ} 19' 54''$; and the aphelion $\simeq 9^{\circ} 9' 34''$.

Jupiter is the largest of all the planets, his diameter being 81155 English miles. See *Planet*.

Jupiter has had his spots observable, ever since the invention and use of large telescopes; and from repeated observations, they shew Jupiter's revolution about his axis is in 9 hours and 56 minutes. Besides these spots, Jupiter has the appearance of three zones or belts encompassing his body: (see *Plate XXV. fig. 4.*) sometimes more, so that his disk seems clouded with them: what they are, no body yet can tell. The axis of this planet is also nearly perpendicular to the plane of his orbit.

Considering the large magnitude of Jupiter, and his short diurnal rotation, the equatorial parts of his surface must have a prodigious velocity, which of consequence must cause him to be of a spheroidal figure (as was shewn of the earth.) Accordingly, Cassini found the axis of the equator to be to that of the poles, as 14 to 15; but Mr. Pound afterwards more exactly determined them to be as 12 to 13, agreeable to Sir Isaac Newton's computation.

Jupiter is observed with a telescope to have four satellites, which move about him in the times and distances following; viz. The first in 1 day 16 hours 27

J U P

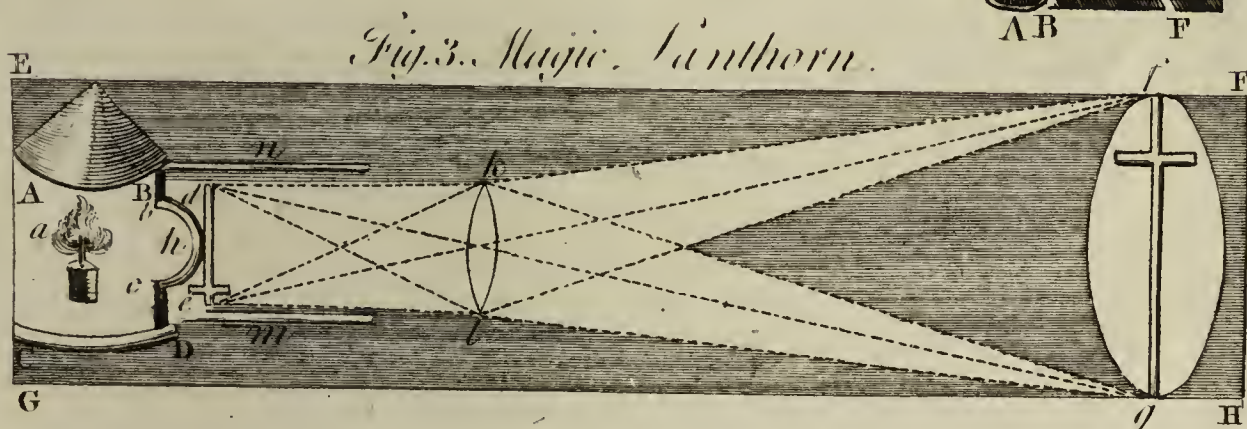
minutes, at the distance of 5.6 semi-diameters of Jupiter's body from his center, as measured by a micrometer. The second in 3 days 13 hours 13 minutes, at the distance of 9 semi-diameters. The third in 7 days 3 hours 42 minutes; at the distance of 14.3 semi-diameters. The fourth in 16 days 16 hours 32 minutes, at the distance of 25.3 semi-diameters.

Galileo first discovered the satellites or moons of Jupiter, in the year 1610; and called them Medicea sidea, of Medicean stars, in honour of the family of the Medici, his patrons. The famous piece, called *Sidereus Nuncius*, in which he particularly describes the discovery of these stars, he dedicated to Cosmus Medicis II. the fourth great duke of He-truria.

The orbits of Jupiter's moons lie nearly in the plane of the ecliptic, which is the reason why their motion is apparently in a right line, and not circular, as it really is. To understand this, let S (*Plate XXV. fig. 5.*) be the sun, T the earth in its orbit TH, I the planet Jupiter in his orbit AIB, and in the center of the four orbits of his moons. Then, because the plane of those orbits does nearly pass through the eye, the real motion of the satellite in the periphery will be apparently in the diameter of the orbit, which is at right angles to the line joining the center of the earth and Jupiter.

Thus supposing the earth at R, if DC be drawn through the center of Jupiter perpendicular to RI, the motion of each moon and their places will appear to be in that line. Thus, if the exterior moon be at E or F, it will appear to be at I either upon or behind the center of Jupiter; if the moon moves from E to K, it will appear to have moved from I to L; and when it moves from K to C, it will appear to move from L to C. Again, while the satellite moves from C to M, it will appear to move from C to L; and as it goes from thence to F, it apparently moves from L to I. Thus also, on the other side the orbit, while the satellite describes the quadrant FD, its apparent motion will be from I to D; and then from D to I again, as it comes from D to E.

Whence, since this is the case of each satellite, it appears that while each satellite describes the remote half of its orbit CFD, its apparent motion will be direct, or from west to east, along the line CD; and while it describes the other half



JUPITER. ♃

Fig. 4.

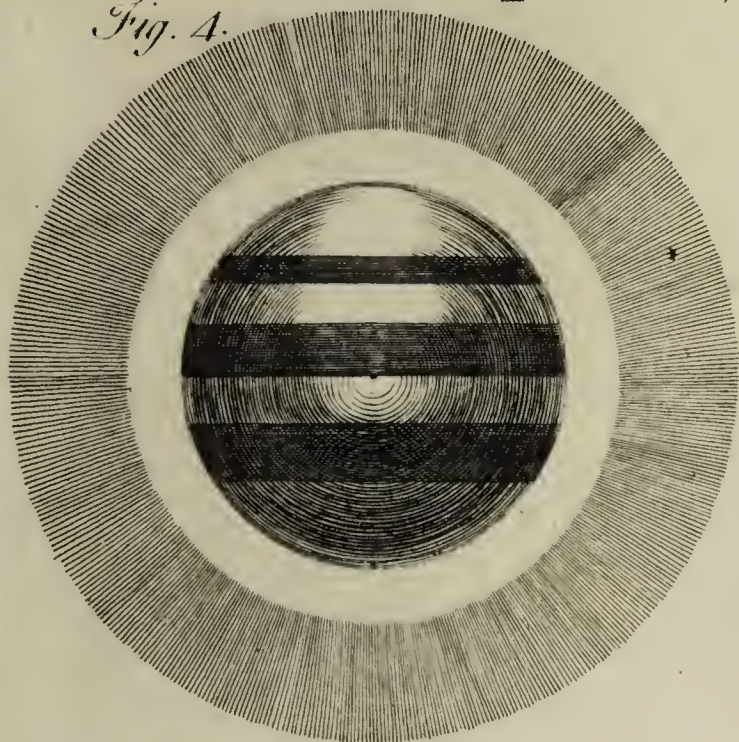
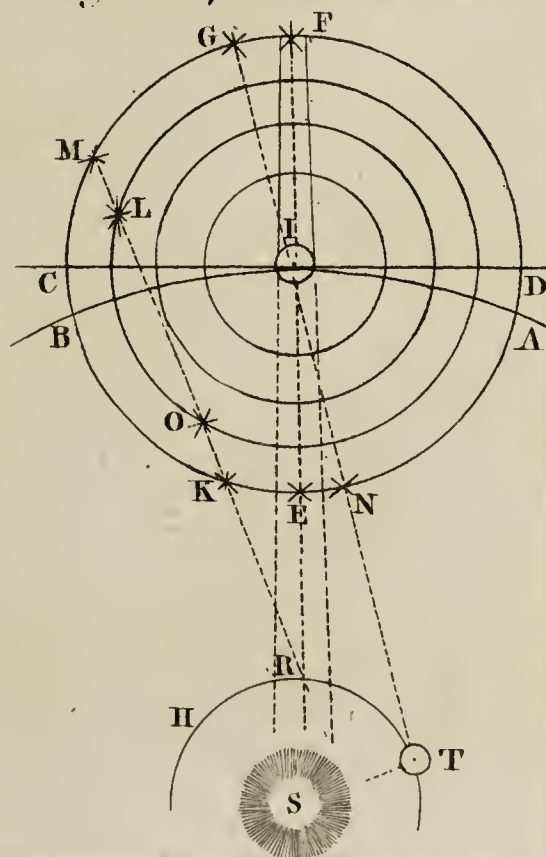


Fig. 5. Jupiters Moons



half DEC, its apparent motion is retrograde, or from east to west, back again along the same line from D to C; so that each satellite traverses the diameter of its orbit twice in each revolution.

The moons of Jupiter severally shew the same phases to him as ours does to us. They disappear from our sight sometimes; so that it is very rare to have all the four in view at once; nor is it possible to know which satellite in order you see, but from the knowledge of the theory and calculation; because the remotest satellite may appear nearest to Jupiter, and the contrary, as is evident from a view of the figure.

These moons, like our own, suffer an eclipse every time they come into the shadow of Jupiter, as at F. Also supposing the earth at T, the satellite at G will undergo an occultation behind the body of Jupiter, as is evident from the scheme. Again, a satellite will sometimes lose its lustre, as it passes over the enlightened disk of its primary; as when it is at E and N, and the earth in R and T. Lastly, one satellite at O may disappear behind another at K, or cause another to disappear behind it at M.

The observations by telescopes have been carried so far as to make it very probable, that all the satellites do really revolve about their own axis, by means of spots which they have discovered to belong to them, and which by their motion cause a great variety in the brightness of the satellites, and sometimes do almost obscure them: for which see Mr. Pound's observations on Jones's Abridgment of the Philosophical Transactions, volume IV. p. 307.

By means of Jupiter's satellites several noble problems in natural philosophy have an easy and elegant solution; the first of which is to determine the ratio of the velocity of light: for the manner how this is done, see *Light*.

The second is to determine the longitude of a place from any proposed meridian; which is easily done by the following method: Let the moment of time in which the satellite enters the shadow of Jupiter be calculated for the given meridian from tables of its motion; then let the moment of time be well observed, when this immersion happens at the proposed place; the difference of these two moments turned into motion will give the longitude of the place, allowing 15 degrees for every hour, 1 degree for every

4 minutes of time, or 15 minutes of 1 degree for every minute of time. See *Longitude*.

The third problem is to find the distance of Jupiter from the sun. This is done as follows: Let the middle moment of the occultation of a satellite, as at G, be observed; and again the middle moment of the following at F; this will give the time in which the arch GF is described. Then say, as the time of the whole revolution is to the time now found, so is the whole circle of 360 degrees to the degrees and minutes contained in the arch FG; which is therefore the measure of the angle FIG, or its equal TIS, which is the parallactic angle at Jupiter; which being known at this distance of Jupiter from the sun, IS is very easily found.

JURATS, in some counties, as at Maidstone in Kent, Rye in Essex, &c. are in the nature of aldermen for governing their several corporations; so in Jersey, they have a bailiff and twelve jurats, or assistants, to govern the island.

JURIDICAL, something belonging to the law; so juridical days are such whereon courts are held for the dispatch of law business.

JURIS-CONSULTUS, among the Romans, was a person skilful or learned in the law; with us it means a council, serjeant, judge, &c.

JURISDICTION, in law, the power and authority with which any person is invested in administering justice in cases of complaint laid before him.

Jurisdictions are either ecclesiastical or secular; ecclesiastical belongs to bishops and their deputies.

Secular jurisdiction belongs to the king and his judges. The courts and judges at Westminster are not restrained to any county or place, they having jurisdiction all over England; but other courts are confined to their particular jurisdictions, which if they go beyond, all their proceedings become erroneous: as to inferior jurisdictions, they are of several sorts; one of which is to hold pleas, and the plaintiff may either sue there or in the king's courts. Another is the consueance of pleas; where a right is invested in the lord of the franchise to hold pleas. A third kind is an exempt jurisdiction, as where the king grants to the inhabitants of a particular city or corporation, the privilege of being sued only within their own city, &c.

J U R

JURISPRUDENCE, the science of what is just or unjust; or the knowledge of laws, rights, customs, statutes, &c. necessary for the administration of justice.

JURIS UTRUM, in law, a writ in behalf of a clergyman, whose predecessor has alienated the lands belonging to his church.

JUROR, in law, any person sworn on a jury.

JURY, a certain number of men sworn to enquire into and try a matter of fact, and to declare the truth upon such evidence as shall appear before them.

Juries are, in these kingdoms, the supreme judges in all courts and in all causes in which either the life, property, or reputation of any man is concerned: this is the distinguishing privilege of every Briton, and one of the most glorious advantages of our constitution; for as every one is tried by his peers, the meanest subject is as safe and as free as the greatest.

All criminal causes must first be tried by a grand jury, which commonly consists of twenty-four men of greater note than the petite jury, who are chosen indifferently out of the whole county, and no man can suffer the disgrace of being tried in any ignominious cause, without their first finding him guilty; if they find him innocent, he is immediately discharged; but if otherwise, they only find an indictment, on which he is tried, and finally acquitted or convicted by the verdict of the petite jury, who are not only to be returned from the county where the fact was done, but near neighbours, such as are most sufficient and least suspicious: to prevent partiality, the names of the persons impannelled are wrote on several pieces of paper of equal size, and delivered by the under-sheriff to the judge's marshal, who causes them to be rolled up, all in the same manner, and put together in a box, and when any cause is brought to trial, some indifferent person is to draw out twelve of these papers, and the persons whose names are drawn, if not challenged, are to be the jury to try the cause; and in case any are challenged and set aside, or do not appear, then a further number is to be drawn, till there is a full jury.

When a jurymen is sworn, he must not depart from the bar on any account whatsoever, till the evidence is given, without leave of the court; and if that be obtained, he must have a keeper with

J U R

him. As soon as the whole evidence is summed up, the jury are to be kept together till they are all of one mind, and unanimous in bringing in their verdict, without being admitted to the speech of any person, and without meat, drink, fire, or candle. They are fineable, if they agree to cast lots for their verdict, and also for being tampered with in relation to it: but as they are the sole judges of the fact, they are not fineable for giving a verdict contrary to what may appear plain evidence, because the law presumes that they may have some other evidence besides what is given in court; but where any corruption appears, a jury may be attainted for going contrary to evidence; and if a juror takes any thing either of the plaintiff or defendant for giving a verdict, he is to pay ten times as much as he has taken, or suffer a year's imprisonment; yet in trying causes, juries are to have their charges allowed them by the court. In all cases of difficulty, it is safest for the jury to find the essential matter, and to leave it to the judge to determine how the law stands upon the fact.

Infants, persons of seventy years of age and upwards, clergymen, apothecaries, &c. are exempted from serving upon juries; and barons, and all above them, are not to serve in any ordinary jury. Jurors, in London, must not only be housekeepers, but have land or goods worth one hundred pounds; and they may be examined on oath as to that point. 3 Geo. II. c. 25.

The qualification of a jurymen for a county, is ten pounds per annum, either in freehold or copyhold-estate, within the same county; but cities, boroughs, and corporate towns, are excepted by the statutes: however, no jury is obliged to appear upon a trial at Westminster, where the offence was committed thirty miles off, except it be required by the king's attorney-general. According to usage, the sheriff should return twenty-four jurors, in order to speed the trial in case of challenge, sickness, &c. and should he only return twelve, pursuant to the writ, he is liable to be amerced. By 4 and 5 W. and M. no sheriff, bailiff, &c. under the penalty of ten pounds, shall return any person to serve on a jury, who has not been duly summoned six days before his appearance, nor under the like penalty shall he accept of money or other reward for excusing the appearance of a jury-

juryman : jury men neglecting to appear, shall be fined in a sum not exceeding five pounds, nor less than forty shillings, except they can give a reasonable excuse for their non-appearance ; and in case a juryman does appear, and refuses to be sworn, or to give a verdict, an attachment may be issued against him.

Lists of jurors, according to the statutes of 4. and 5 W. and M. and 7 and 8 W. III. are now to be made from the rates of each parish, and fixed on the doors of churches, &c. twenty days before Michaelmas, that public notice may be given of persons omitted who are qualified, or of persons inserted who are not so ; after which, the lists being settled by the justice of the peace at the quarter-sessions, duplicates are to be delivered to the sheriffs by the clerks of the peace ; and the names contained in these lists must be entered alphabetically by the sheriffs in a book to be kept for that purpose, together with their additions and places of abode. The sheriffs are liable to be fined for returning other persons ; and also if they return jurors that have served two years before. Sheriffs, on the return of writs of *venire facias*, are to annex a pannel of the names of a competent number of jurors, mentioned in the lists, and not less than forty-eight in any county, nor more than seventy-two, unless they are otherwise directed by the judges, which jurors shall be summoned to serve at the assizes, &c.

When it is conceived that an indifferent and impartial jury will not be returned by the sheriff, a special jury is allowed ; in which case the court, upon a motion made, will order the sheriff to attend the secondary of the king's bench with his book of freeholders of the county, and the secondary is to mark a jury, in the presence of the attornies on both sides : also, if a cause of consequence is to be tried, the court of king's bench, on a motion upon an affidavit made, will make a rule for the secondary to name forty-eight freeholders, out of which each party is to strike out twelve, one at a time, the plaintiff's attorney beginning first, and the remainder of the jurors will be the jury for the trial : though the nomination of a special jury ought to be in the presence of the attornies on each side ; yet in case either of them neglects, or refuses to attend, the secondary may proceed, and strike out twelve for the attorney that makes default. By 3 G. II. c. 25. on the

motion of the prosecutor, plaintiff, or defendant, on trials of issues on indictments, and in all actions whatsoever, the courts of Westminster are authorised to order a special jury to be struck in the same manner as upon trials at bar. Where a special jury is ordered by a rule of court, in any cause arising in the city, corporation, &c. this jury is to be taken out of the lists or books of the persons qualified, which are to be produced by the sheriffs, &c. before the proper officer. The same indulgence is granted both to merchants and foreigners ; for where two merchants are plaintiff and defendant, the court may be moved for a jury of merchants to try the issue between them ; and if either of the parties in the suit be an alien, the jury, at the desire of the party, is to be composed of half foreigners and half English. See the articles *Peers* and *Verdict*.

JURY-MASTS, is a yard, or other mast put down into the step of the fore or main-mast, and fastened into the partners, which being furnished with sails, &c. the ship is steered and sailed as well as they can, when by storm or battle the fore or main-mast is lost.

JUST, a sport or exercise formerly used at the court of princes, sometimes called tournaments or tiltings, which consisted in fighting on horseback, armed with armour, and a spear or lance, one person to one.

JUST, sincere, honest, meet, fit, right, reasonable.

JUSTICE, *Justitia*, in a moral sense, one of the four cardinal virtues, which gives every person his due ; also the name of a supreme civil officer or magistrate appointed by the king or commonwealth to do right to the complainants by way of law ; of these there are many sorts and distinctions, as justices of the peace, who are, or at least should be persons of wealth, credit, and unexceptionable character, appointed by the king's commission to attend the peace of the county where they live, of which some are called of the quorum, or superior to the rest, without the presence or assent of whom no business of importance may be transacted ; their office is to call before them, and examine and commit to prison all thieves, murderers, conspirators, rioters, or other disturbers of the public peace, or to admit some to bail, and order others to be whipped, &c. according to the nature of the offence.

Justice is painted in a crimson mantle trimmed with silver, and was called the goddess Astrea, who holds a pair of scales in one hand, and a sword in the other.

JUSTICE, *Justiciarius*, in a legal sense, a person deputed by the king to administer justice to his subjects, whose authority arises from his deputation, and not by right of magistracy.

JUSTICES *within the Liberties*, are justices of the peace who have the same authority in cities or other corporate towns, as the others have in counties, and their power is the same, only these last have the assize of ale and beer, wood, and victuals, &c.

JUSTICES *of Oyer and Terminer*, are those who are appointed to hear and determine what is to be done with offenders against the public peace, as insurrections, riots, thefts, &c.

JUSTICES *of Gaol Delivery*, are those who are commissioned to determine the cause of those, who are committed to gaol upon offences committed against the public peace and safety of the commonwealth.

JUSTICES *of Nisi Prius*, and *Justices of Assize*, are now the same, and try causes of right and property between man and man.

Chief JUSTICE of the King's Bench, is by his office a lord, whose business it is to hear and determine all pleas of the crown, viz. treasons, felonies, &c.

Chief JUSTICE of the Common Pleas, hears and determines all causes at the common-law, that is, all personal and real causes; and he is likewise a lord by his place.

Lords JUSTICES, are such of the nobility to whom by deed the power of the executive part of the law is deputed by the king, during his absence abroad in foreign countries.

JUSTICE-SEAT is the highest foreign court, always held before the lord chief justice in eyre of the forest; in which court fines are set for offences, and judgments given.

JUSTICIARY, one who acts as a justice, and administers right.

JUSTICIARY, or *Court of JUSTICIARY*, in Scotland a court of supreme jurisdiction in all criminal cases.

JUSTIFIABLE, that may be vindicated, defended, or proved to be in the right.

JUSTIFICATION, in law, signifies a maintaining, or shewing a sufficient

reason in court, why the defendant did what he is called to answer.

JUSTIFICATION, in divinity, is clearing a transgressor from the punishment threatened in the divine law, by applying or imputing Christ's righteousness to the sinner, and pleading his merits and sufferings in behalf of the offender.

JUSTIFY, to vindicate, defend or clear, to prove right, innocent, or harmless; in printing it is the amending certain irregularities that arise by the letters in a form not being exactly sized, and so rendering the lines uneven.

* **JUSTINIANI** (**AUGUSTIN**) bishop of Nebbio in the isle of Corsica, was born at Genoa in the year 1470. He became a Dominican the 25th of April, 1487, and applied himself to his studies with so much earnestness, and under such able masters, that he became a very learned man. He understood philosophy, mathematics, divinity, Greek, Hebrew, Arabick, and Chaldee. He taught in the province of Lombardy eighteen years with great advantage to his hearers; he was made bishop of Nebbio the fifteenth of November, 1514, at the recommendation of Cardinal Bendinello Saoli his cousin, and received his bulls before he knew the good offices this cardinal had done him. He assisted at the council of Lateran, and opposed some articles of the Concordate agreed upon between France and the court of Rome. Nevertheless Francis I. invited him to Paris, and made him his almoner. He made use of this prelate's great skill to set up the study of the Oriental tongues in the university of Paris. Justiniani finding himself so near England, took a voyage thither, and was very much caressed by Henry VIII. He collected a very fine library, and left it by his will to the republic of Genoa. He made many reparations in his bishoprick, and increased the revenues of it; he so beautified his cathedral church, dedicated to the holy virgin, that Maracci placed him among her faithful servants. He also translated into the vulgar tongue some Latin works, the reading whereof might be useful to clergymen. He lost his life at sea, in passing from Genoa to the isle of Corsica, in the year 1536. He was not only a learned prelate, but very laborious, as it appears from the works he composed, and from those which he caused to be printed. He went about a Polyglot bible, part whereof we may reckon the psalter, which he published. He was at
great

great charges for the edition, and finding that he could not get his money by the sale, and that princes did not promote his designs, he complained of the ingratitude of his age.

* **JUSTITIA**, in Pagan worship, one of the virtues to whom the Romans erected altars. She was represented in the figure of a woman with a severe countenance, holding a pair of scales in one hand, and a sword in the other; or rods, and a bundle of axes, and sitting upon a square stone. She frequently appears blindfold, to shew that Justice has no respect of persons.

JUSTNESS, when applied to behaviour, signifies honesty, sincerity, piety, &c. when spoke of language, means the using the most pure, proper and significant phrases; when to thought, it means the arranging the ideas of the mind so methodically, that the truth or falsehood of a proposition appears undeniably certain.

JUTLAND, a peninsula of Denmark, anciently called the Cimbrian Chersonese, situate between eight and eleven degrees of east longitude, and between fifty-five and fifty-eight degrees of north latitude, bounded by the Categate sea, which separates it from Norway, on the north, by the same sea, which divides it from the Danish islands and Sweden, on the east, by Holstein on the south, and by the German ocean on the west, and is divided into North and South Jutland, the south usually called Sleswick; the whole about one hundred miles in length, from north to south, and ninety miles in breadth, from east to west. The soil of North Jutland is not very fruitful, however they have corn enough for themselves, and abound in cattle, which they sell lean in Germany and the Netherlands, where they thrive extremely. Sleswick is more fruitful in corn, horses, and other cattle, with which they furnish the countries to the southward of them. The country is well situated for a foreign trade, and has excellent harbours, but they want stock to traffic with. North Jutland is entirely under the dominion of the king of Denmark, but the duke of Holstein has the joint dominion of part of Sleswick with him, and in some great towns and territories of Sleswick each of them has a distinct dominion. The duke of Holstein's capital in Sleswick is the city of Gottorp. From this country came the Anglo-Saxons, who conquered England in the fifth century.

JUTURNA, a goddess, or nymph, worshipped by the Romans, and especially by the women and maids; by the first, because they expected by her assistance to have easy and safe deliveries in child-birth; by the latter, that they might have good matches or husbands; the story is, that being a maid of great beauty Jupiter fell in love with her, and for the favour of mutual affection, he bestowed immortality upon her, either by changing her into a fountain, or making her the guardian of it, whose water was used in their sacrifices, especially in those of the goddess Vesta.

* **JUVENAL (DECIUS JUNIUS)** a celebrated Latin poet, in the first century, was born at Aquinum, in Italy. He went to Rome in his youth, and there spent half of his life in making declamations. He afterwards composed satires, by which he acquired great reputation; but having lashed in his verses Paris, who was Nero's buffoon and comedian, he was banished, by being sent to command some troops in Pentapolis, on the frontiers of Egypt and Lybia. It is believed that he lived till the reign of Adrian, in 128. There are still extant sixteen of his satires, in which he discovers great wit, strength and keenness in his language; but his style is not perfectly natural, and the obscenities with which these satires are filled, render the reading of them dangerous to youth.

* **JUVENCUS (CAIUS VECTICUS AQUILINUS)** one of the first of the Christian poets, was born of an illustrious family in Spain. About the year 329 he put the Life of Jesus Christ into Latin verse, of which he composed four books. In this work he followed almost word for word the text of the four evangelists; but his verses are written in a bad taste; and his Latin is not pure.

* **JUVENTA**, in Pagan worship, the goddess of youth, who had her statue placed in the Capitol at Rome by Servius Tullius, and had two temples erected for her in that city.

* **JUXON (WILLIAM)** archbishop of Canterbury, was born at Chichester, in Sussex, in 1582, and being put to Merchant-Taylors school in London, was sent upon that foundation to St. John's college, Oxford, where he obtained a fellowship. He there chiefly applied himself to the study of the law, and entered himself a student of Gray's Inn, apparently with the view of becoming a barrister; but

but soon entering into the priesthood, he applied himself solely to the study of divinity, and in 1609 was presented to the vicarage of St. Giles, in Oxford, whence he was six years after promoted to the rectory of Somerton, in Oxfordshire. About this time, becoming the favourite of archbishop Laud, he by his means obtained several preferments, and among the rest, was made president of the college, vice-chancellor of the university, one of the chaplains to king Charles I. and at length bishop of London. Though the city was at that time highly displeased with the arbitrary measures taken by the court, bishop Juxon behaved in it with such sweetness of manners, that all parties concurred in loving and revering him. At length, in 1635, Laud being bent on increasing the power of the church, procured for him the post of lord-high-treasurer of England. The whole nation, and especially the nobility, were greatly offended at this high office being given to a clergyman; but he behaved so well in the administration, as soon put a stop to all the clamour raised against him. This place he held no longer than the 17th of May, 1641, when he prudently resigned the staff, to avoid the storm that then threatened the court and the clergy: for he had seen his patron the archbishop committed to the Tower the preceding year. In the following February, an act passed depriving the bishops of their votes in parliament, and incapacitating them from any temporal jurisdiction. In these leading steps, as well as the total abolition of the episcopal order which followed, he was involved with his brethren; but neither as bishop nor as treasurer was a single accusation brought against him in the long parliament.

During the civil wars he resided at his palace at Fulham, where his meek, inoffensive, and genteel behaviour, notwithstanding his remaining steady in his loyalty to the king, procured him the visits of the principal persons of the opposite party, and respect from them all. In 1648 he attended on his majesty at the treaty in the Isle of Wight, and, by his particular desire, waited upon him at Cotton-house, Westminster, the day after the commencement of his trial; during which he frequently visited him in the office of a spiritual father; and his majesty declared he was the greatest comfort to him in that afflictive situation. He likewise attended his majesty on the scaffold, where

the king taking off his cloak and George, gave him the latter: after the execution, our pious bishop took care of the body, which he accompanied to the royal chapel at Windsor, and stood ready with the Common Prayer-book in his hands, to perform the last ceremony for the king: but was prevented by colonel Whitchcot, governor of the castle.

He continued in the quiet possession of Fulham palace till the ensuing year, 1649, when he was deprived, having been spared longer than any of his brethren. He then retired to his own estate in Gloucestershire, where he spent his days in privacy, only now and then, for his health's sake, riding a hunting with some of the neighbouring gentlemen. Thus he lived till the Restoration, when he was presented to the see of Canterbury, and in the little time he enjoyed it, expended in buildings and reparations at Lambeth palace, and Croyden-house, near fifteen thousand pounds. In the latter end of his life he was greatly afflicted with the stone, which put a period to his life, on the 4th of June, 1663, at the age of eighty-one. He bequeathed seven thousand pounds to St. John's college; and to other charitable uses, near five thousand pounds. He published a Sermon on Luke xviii. 31. and some considerations upon the Act of Uniformity.

JUXTA-POSITION, in natural philosophy, expressing that order of assemblage of the component parts of any body, that nature has appointed it, whereby one body or matter is known and distinguished from another, by the several properties wherewith it is endowed, and the uses it is fitted for.

IVY, *Hedera*, in botany, an evergreen plant climbing and spreading on trees and old walls; with numerous slender twigs, and angular leaves. When grown old, the angles of the leaves disappear, the plant becomes erect, produces flowers, small and herbaceous, in autumn; and clusters of black berries in winter.

The leaves of ivy have a very nauseous taste, and little or no smell. Haller says, they are commended in Germany against the atrophy of children. Among us, they are sometimes applied externally by the common people, for drawing and healing running sores, and keeping issues open.

The berries were supposed by the ancients to have a purgative and emetic quality; and later writers have recommended

mended them, in small doses, as alexipharmic and sudorific. It is said, that in the London plague, the powder of them was given in vinegar or white wine with good success. It is probable, however, that the virtue of this compound was rather owing to the vehicle than to the ivy-berries.

* **IXION**, in fabulous history, king of the Lapithes, married Dia, the daughter of Deionius, to whom he refused to give the customary nuptial presents. Deionius in revenge took from him his horses: when Ixion, dissembling his resentment, invited his father-in-law to a feast, and made him fall through a trap-door into a burning furnace, in which he was immediately consumed. Ixion being afterwards stung with remorse for his cruelty, ran mad, on which Jupiter in compassion, not only forgave him, but took him up into heaven, where he had the impiety to endeavour to corrupt Juno. Jupiter to be the better assured of his guilt, formed a cloud in the resemblance of the goddess, upon which Ixion begat the Centaurs: but boasting of his happiness, Jove hurled him down to Tartarus, where he lies fixed on a wheel encompassed with serpents, which turns without ceasing.

IXO, a kingdom of Japan, in the island of Nippon, bounded on the west by the kingdom of Omi, on the east by that of Voari, and on the south by Inga.

* **IXORA**, in Pagan worship, a false god of the East Indians. The Bramins imagine that he is infinite; to illustrate which they say, that Brama, another of their gods, being desirous of seeing Ixora's head, flew up to heaven for that purpose, but found his endeavours vain. On the other hand Vistnou, the god of metamor-

phoses, willing to find the place where his feet stood, transformed himself into a hog, and made a deep hole in the ground with his snout, but without success. The body of Ixora, they say, is so bulky, that the serpent Baltagu, which surrounds seven worlds, is not long enough to serve him for a bracelet. He is represented standing on a pedestal, his head adorned with long hair, his face white and shining, with three eyes, and a crescent upon his forehead. He has sixteen arms, each of which grasps something: one holds fire, another pieces of money, another a drum, another a rope, another a string of beads, another a stick, another a wheel, another a serpent, another a bell, &c. He has an elephant's skin over his shoulders, and is surrounded with several serpents. He wears also a necklace, at which hangs a little bell. All these particulars are said to be emblematical; thus his sixteen hands denote his great power; the serpents twining about him, the revolution of ages; and the little bell, his great vigilance.

IXWORTH, a small town in Suffolk, whose market is weekly on Friday; distant from London 64 computed, and 47 measured miles.

JYNX, the wry-neck, in ornithology, a genus of birds of the pye-kind, the beak of which is smooth, and the nostrils hollowed: the tongue is very long, and of a rounded form, resembling a worm: the toes are four in number, two before and two behind.

Of this genus there is only one known species, called, from its singular manner of twisting its head about, the wry-neck. It is about the size of a lark, and is called by authors jynx, torquilla, turbo, &c.

